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SOME OF THE ARTICLES IN THIS ISSUE ARE:

Long Distance Touring By Automobile,
W. H. STEMMERMAN, M.D.

How Halliday's Prejudice Was Overcome,
EUGENE WOOD.

Motor Vehicles in Business,
W. H. MAXWELL, JR.—A. H. CHADBOURNE.

The Final Automobile, *HUGH DOLNAR.*

Letters from Our London and Boston Correspondents.

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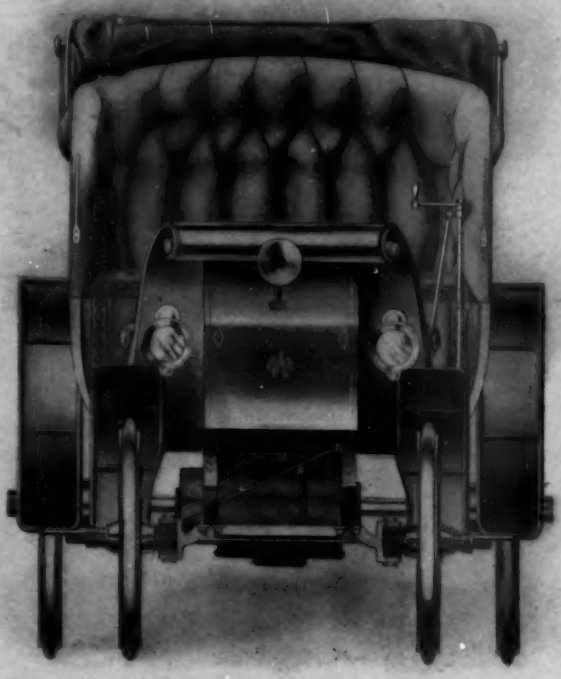
VOLUME III NUMBER I

Clinton E. Woods

Automobiles



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78, Winner of Prize for Cleanest Vehicle in the Anniversary Run of the Automobile Club of Great Britain

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THE AUTOMOBILE MAGAZINE

VOL. III JANUARY, 1901 No. 1

Long-Distance Touring by Automobile

BY W. H. STEMMERMAN, M. D.

THE writer of this article, accompanied by a companion, recently took an automobile trip of something more than 600 miles. The route was from Passaic, N. J., to Philadelphia, to Wilmington, Del., to Perryville, Md., where we boarded a flat car and were carried over the long bridge to Havre de Grace, there being no wagon bridge or ferry there. Thence to Baltimore. From Baltimore to Washington the worst roads were experienced on the whole trip. Thence to Frederick, Md., to Gettysburg, Pa., to York and Lancaster to Philadelphia and home. We were out thirteen days and averaged a little more than 70 miles a day, running time. No effort to "make time" was made.

It is from experience gained in long-distance touring during the past season that the following suggestions are given out. The vehicle used on tour referred to was a "Mobile."

In contemplating a long tour by automobile the first question which presents itself is that of suitable motive power. The average automobilist is, and will be, one who has no training in mechanics, therefore the carriage with the simplest, most easily mastered method of operation should appeal to him, provided that the carriage can travel over bad roads and can climb steep hills. The essential element which provides the power must be one that can be procured everywhere at points not more than 35 or 40 miles apart. The motor must also be of such construction that ordinary little repairs can be made by the talent procurable in smaller cities and villages far away from the "experts'" domain. There seems to be but one answer to this question. For

the purpose and conditions outlined above steam motive power seems to fulfil the requirements better than anything else at the present day.

Those who are waiting for the carriage in which you " touch the button " will probably continue to wait until they are past their automobiling age. Nothing without labor, and for the immense amount of power exerted by a motor carriage some return in the way of care and fuel must be made.

Before a tour in a steam carriage is attempted it must be assumed that the operator has had at least several months' experience in running it, and knows the use and workings of every part of the mechanism. Many purchasers of automobiles refuse to learn any more about their motors than to fire up, fill the gasoline and water tanks and to start and stop. This is a mistake, and while they are not to be censured if they are not inclined to become machinists, they will soon find that it is absolutely necessary to master some details and soil the hands very often. Frequently some trifling derangement if seen and adjusted at once averts serious trouble.

Some of the things it is absolutely necessary for the operator to know are as follows: He must know how to replace a broken water-glass. If the packing is not correctly done and the alignment of the glass with the connections not perfect, leakage and frequent breakage will result. Slight leakage may occur from time to time. This can be remedied when the glass is cold by tightening the connections slightly. A number of extra glasses with packing should be provided. If the pump is not supplying the boiler with sufficient water the operator must know how to tighten up the packing. If this is not sufficient to produce the desired result he must know how to repack the pump. He must know how to clean the check valves and to know enough not to try to clean the one which holds back the steam while there is any pressure in the boiler. An extra pump-arm should be carried. It is easy to put in place if the one in use is broken. He must know how to tighten the piston packing and to replace the packing when necessary.

Too much importance cannot be laid on the subject of oiling every part that needs it. Taking the oil can and blindly showering the engine with oil is not the way to do it. Every oil hole should receive individual attention. For the smaller parts, such as the eccentric straps, in which the holes are very small, a bicycle oil can should be provided. With such a can the oil can be forced into the place intended for it. One part of the machinery which

is extremely important, and which is usually neglected, is the compensating gear on the rear axle. Each little cog should receive its share of oil at least once a day, and the bevel gear as well. The chain should be kept moderately tight and lubricated with graphite paste. The supply of cylinder oil should be very carefully looked after. It is the wisest practise to oil up well on starting out and again every time a stop is made to fill the water tank.

The simpler the outfit the less there is to get out of order, and on a long trip there is enough work to do without worrying about the numerous gimcracks which the manufacturers are daily

Dr. W. H. Stemmerman in his "Mobile"

adding to their carriages. Automatic air pumps, automatic vaporizers, engines running in oil, and so on, are all very nice, comfortable and labor-saving devices. But the place to use a carriage provided with these things is within easy reach of The Man Who Can Fix It when something goes wrong. You will not find The Man 50 miles from home. He can be sent for, but that means delay and expense. Perhaps the word expense should not be mentioned in reference to automobiles.

While multiplicity of parts should be avoided, the addition of

an auxiliary hand pump and an injector should be insisted upon, also a water-column with try-cocks.

The absurd little foot pumps provided by some manufacturers are about as efficient as putty blowers. Get a " scissors " pump of good capacity—the size that retails for about $4—and screw it to the bottom of the front of the carriage. If an extra piece of tubing is provided with connections it can also be used for inflating the tires.

Water-glass connections are provided with check valves to stop the escape of steam and water in the event of breakage. The upper valve does not always act and the steam continues to escape, rendering it difficult or impossible to replace the glass until all the steam is blown off, thereby causing delay. The upper one should be removed and a globe valve substituted by means of which the steam can be quickly turned off when the glass breaks. Many boilers are " burnt out " because the automatic valves sometimes stick and imprison some water in the glass, giving the operator the impression that there is a plentiful supply of water in the boiler, while in reality there is little or none. With the substitution of a globe valve for the upper check valve this will not happen.

A carriage upon which the brake does not act when going backwards as well as forwards is dangerous and should not be used.

Before starting out on each day's run see that the gasoline tank is completely filled, no matter how little of it may have been used the day before. Unknown roads are before the traveler, and ordinary calculations as to the amount likely to be consumed are very apt to be wrong. On good roads the writer can travel from 60 to 75 miles without refilling the gasoline tank, and from 25 to 35 miles without refilling the water tank. On the other hand, while traveling through a bad section of " darkest " Maryland, 12 miles of going over, or rather through, a sandy stretch of road was sufficient to empty the water tank. And on another occasion the gasoline gave out after running about 45 miles. No gasoline was procurable, the automobile manufacturers' statement that " gasoline can be procured at any little hamlet " to the contrary notwithstanding. The services of the despised horse had to be called in and a five-mile tow to the nearest town was necessary. Therefore it should be put down as a rule to lay in a supply of gasoline whenever it can be had. A fact worth remembering is that where you find a plumber there you will find gasoline. And it is safe to figure on finding a plumber at least every 30 miles.

A funnel with the sides slightly flattened to permit its being easily packed, and with a fine meshed strainer soldered in, should be carried and all gasoline carefully strained. It is better to use a piece of flannel in addition to the strainer, and every particle of foreign matter removed, which, if allowed to enter the vaporizing tubes will, by accumulation, clog them so that the flow of gasoline is impeded and the fire will burn imperfectly or not at all.

It is good practice to blow out the boiler after each day's run. Particularly as the water supply during the day has come from so many sources, such as wells, brooks and the different kinds of "city" water. Even if the water is strained, as it should be before it enters the tank, many particles of solid matter will find their way in, and this, with the sediment produced by boiling the water, will soon foul the boiler if it is not blown off as suggested.

Goggles made of plain mica with felt rims should be carried ready for use. In the cities they are necessary on windy days to keep out dust, and in the country because it is sometimes impossible to see to guide the carriage on account of the myriads of winged pests that abound at certain hours of the day, and which are blown into the eyes unless they are protected.

It is well to have a tin case made to protect the engine from dust and mud. This is simply a plain box, neatly made, the bottom at the front end being rounded, bolted to the carriage and painted black or some dark color. It is open at the top to permit inspection and oiling of the engine and should be readily removable to facilitate cleaning. Holes should be cut at the bottom to permit waste oil and water drainage. The differential gear should be similarly protected; this not only keeps out dirt, but also the grease from the exhaust which often finds its way on the brake. A lubricated brake band is certainly not desirable. The illustration does not show the protective casing, it having been temporarily removed.

In the matter of punctured tires, it is not desirable to carry much repair material even if the operator is willing to do such work. Bicycle repair shops abound, and if the injury is not too bad it can be plugged. The best plan is to carry an extra tire. This can be carried under the front of the carriage. Place the tire on the reaches and tie it securely in several places, as it is apt to shift. With a preparation of rubber in the form of a soft paste which comes in small tubes, and a syringe with which it is injected, small punctures, such as are made by tacks and small nails, can be readily repaired by any one, even on the road, although it is best to let it "set" to get the best results.

In putting the automobile away for the night when away from home it is well to see that it is either under lock and key or in the hands of a responsible party. There is always some one at hand either malicious or curious who may cause a mishap by meddling with things that should be sacred to him. A first-class man who is used to cleaning fine carriages may be allowed to clean the automobile, but no one should be permitted to touch the engine but the operator. With the protective casing mentioned above and wiping it carefully very day with cotton waste the engine can easily be kept clean.

Before a long trip is made the carriage should be thoroughly inspected by an expert. Thus any incipient trouble is avoided.

The enjoyment of a tour is made or marred by the traveling companion. A congenial, helpful companion, if found, is a treasure. He, of course it ought to be a He, can look up the matter of roads and cross-examine the natives on the subject. Road maps are not very helpful, as they are usually made for wheelmen. A road may be good for bicycles, as they need only a narrow strip, but an automobile must have good wagon roads. While the operator concerns himself only about the machine and its needs, let his companion do all the questioning. It is well to get all the facts about the quality of the roads and distances every evening, getting the names of the intermediate towns between objective points. Usually the bicycle dealers can give accurate information, but the experienced tourist will always have his acquired information corroborated. This is extremely important.

If the suggestions as here outlined are carried out and a system of work adopted an automobile trip will be found a unique, instructive and enjoyable way of spending a week or two. It is not well to try to " make time " or to formulate a schedule. Lay out a route and make no promises as to when the return will be made. This will permit lingering in pleasant places, and side trips that may present themselves.

Parade of the Worcester Automobile Club

THERE is something peculiarly attractive about a parade to the average person, and especially is this so when composed of so new and popular a means of conveyance as the automobile has proved and is proving itself to be.

B. A. Robinson and Wife

The Worcester (Mass.) Automobile Club, an aggressive organization about which we had something to say in our last issue, held a parade on Saturday, November 17. The weather was just what an automobilist likes for such an occasion, no wind to tear the decorations, no mud to bespatter the bunting, and practically no dust,

the parade was confined to the city proper. A start was made from 671 Main street punctually at 2:15, and proceeded to the City Hall, where Gen. Fred W. Wellington, Col. H. C. Smith and A. S. Lowell acted as judges. Mr. W. H. S. Nourse, chief marshal of the club, was all about, and needless to say, managed the parade in a creditable manner.

H. T. McKnight and Geo. Tryon

Altogether there were fifteen carriages in the procession. B. A. Robinson led in his Stanhope, Mrs. Robinson being at his side. Next came J. E. Farwell in his surrey, which was decorated with yellow chrysanthemums and evergreen.

H. T. McKnight, the genial secretary of the club, was next, in his runabout. He was accompanied by Mr. George Tryon. It was decorated with colors of white and lavender, and presented a very pretty appearance.

J. W. Bigelow's surrey was decorated with chrysanthemums and bunting. Kenneth A. Skinner, the well known motocyclist, was also present. He rode in a motorette.

J. W. Bigelow and W. J. H. Nourse

For the finest decorated vehicle a prize was awarded to Mr. J. W. Bigelow, while Mr. Sumner, who operated a Victoria, gained second prize. The whole affair was a decided success, and great credit is due to the members who were responsible for the planning and subsequent carrying out of the parade. Great numbers of people turned out to witness the gay automobilists as they passed along.

The French Alcohol Trials

IN our December issue we gave some facts concerning the recent French trials of automobiles using alcohol instead of gasoline. The further additional particulars regarding these trials are taken from *The Autocar:*

"As a manifestation for bringing to the fore the question of cheapening alcohol and educating the public up to the importance of this matter, the trials which were carried out on a recent Sunday from Paris to Rouen must be regarded as an unqualified success. The fine weather attracted an enormous crowd to the Porte Maillot, where the start took place, and the avenues each side were lined with some thousands of spectators, who appeared to take the greatest interest in the competing vehicles. The presence of the Minister of Agriculture showed that the Government was not overlooking the possibilities of alcohol from the point of view of the national industry, and, in fact, he was able to announce that his department had already taken an important step toward rendering alcohol more suitable for consumption in motors. When it is remembered that a twelvemonth ago there were only about half a dozen vehicles taking part in the first trial, it must be recognized that the question of alcohol since that time has made enormous headway, for in the Sunday trials there were no fewer than fifty-one starters, of whom thirty succeeded in covering the full distance of 78 miles from Paris to Rouen within six hours. At the first trials only one car was able to go from Paris to Chantilly and back. It is true that at that time the motors were only able to use pure alcohol, and that on the present occasion they all, with the single exception of a Gobron-Brillie car, employed carbureted alcohol, usually consisting of alcohol and benzoline mixed in equal proportions. A good deal has been said about the absence of visible exhaust when using alcohol, and it was therefore rather surprising to see a cloud of white vapor hanging over the cars when viewed from a distance. But a close inspection of the vehicles did not reveal any visible exhaust, except in a very few cases. Again, it is said that there is no smell from burnt alcohol; but though it is not so conspicuous as the odor of petrol, it is yet distinctly more disagreeable, and it is doubtful whether one can ever get entirely accustomed to this acrid smell.

"The results of the trials may be regarded as all the more

satisfactory since, with very few exceptions, none of the motors had been specially constructed for burning alcohol, and were merely ordinary petrol engines which had undergone no modification beyond regulating the proportion of air to spirit. Two very imposing cars were the Gobron-Brillie vehicles, one using pure alcohol and the other driven by Madame Gobron. It was impossible to get a good view of all the cars in such a large crowd, but we noticed that the Gladiator voiturette started off well, and a good impression was made by the three Henriod cars, which are fitted with the maker's well-known type of motor specially adapted for alcohol, and burning a spirit carbureted according to a formula invented by M. E. C. Henriod himself. In this connection it may be remarked that a large number of oil firms have brought out different kinds of carbureted alconol which they are selling under various names, and these were mostly used by the competitors in the trials. Beside a little Clement-Panhard car we noticed a fine big racing vehicle by Rochet et Schneider, built something on the lines of the new Mors vehicle, but with a much longer wheel base. This was followed by a light Peugeot and a Decauville car, and then came a couple of strange looking vehicles bearing no name, but entered by a M. Vilain. These cars are propelled by a horizontal motor, and the ends of the motor shaft carry large loose pulleys which are connected with the driving wheels by wide belts. The motor is apparently put into gear by keying the pulleys on to the shaft in some way, but it was impossible to see from a cursory inspection how this was done. Another feature of the cars is a novel type of silencer, consisting of a couple of circular plates between which are interposed a thickness of fibrous material of, say, a quarter of an inch. The exhaust enters from a pipe brazed on to the centre of one of the plates, and escapes around the circumference through the porous material. The arrangement appears very effective in so far as it may entirely suppress the visible exhaust, but it would seem to create a resistance that may be expected to lower the efficiency of the motor. Following these little cars were a Panhard and Levassor and a big Mors vehicle, and then came a Bolide car, in which some modification has recently been made in the transmission, for we noticed that the motor shaft in the forepart of the car is connected with the counter-shaft at the rear by a chain upon the same principle as the Amedée Bollée vehicle, in which, of course, the chain is replaced by a belt. One of the last to start was Baron Henri de Rothschild, who piloted his German Daimler with a motor of 28 horse-

power. Each vehicle was accompanied by an observer, who had to take a sample of the spirit from the alcohol tank at the start, and the analysis of these samples will be taken into account when preparing the final results of these trials.

"As the event was not a race, the competitors were required to keep within the legal limit of speed, and each car was timed at the start and finish, but this did not prevent one or two competitors making some really remarkable performances, the run of Giraud on his Panhard car being especially noteworthy. Starting among the last, he finished first at Rouen in 2 hours 15 minutes, notwithstanding that he had to go carefully through the suburbs of Paris. He must thus have beaten the record between St. Germain and Rouen, and this must be regarded as a great triumph for the new spirit. His consumption was twenty-five and a half litres of carbureted alcohol, which cost in Paris 14 francs 80, as compared with 17 francs 90 that would have had to be paid for petrol spirit. It is still a question, however, whether the consumption of petrol would not have been less, but, in any event, the difference could not have been so great as to give it an advantage in economy over alcohol. There were naturally a great many incidents on the road, and a large number of vehicles were stranded in the suburbs, mostly through trouble with the carbureters. The second arrival at Rouen was Girardot on his 12 horse-power Panhard car, which took 2 hours 55 minutes to cover the distance, and consumed seventeen litres of carbureted alcohol. The Gobron-Brillie car, which used pure alcohol, ran over the course without incident in 3 hours 19 minutes."

Notes from London.

BY LOUIS J. OATES.

ROYALTY is evidently desirous of giving a good advertisement to automobilism. H. R. H., the Prince of Wales, himself has become an owner. No doubt in the near future the motor car will become a necessary adjunct to every Royal householder. The King of the Belgians is quite an enthusiast, and it is well known that the Kaiser takes a deep interest in automobilism from a purely military standpoint.

From Royalty to racing is not a very far cry, and I was much interested to find the undermentioned paragrapher taking a leading position in the columns of the *Sportsman*, a paper which is well known in the United States. It appears that as a result of a conversation between Sam Darling, the trainer, and Lord Carnarvon, the other day, arrangements are in contemplation for a service of automobile vans to convey horses to meetings on the South Western and other railways. It is acknowledged on all hands that the attempt to transport horses by rail is fraught with the most uncertain consequences and the most exasperating delays, therefore it is anticipated that the new scheme will enable trainers to get their charges to the place of action much more satisfactorily. After all it will only be a further elaboration of the traveling van as first designed by Lord George Bentwick, and the fact that the automobile can be stopped at will, and the horse taken out and exercised, is always in its favor. If trainers will only support such a scheme on a purely co-operative basis they might become in a large measure independent of the railway companies, and I feel sure that it will not take long to convince the most conservative of trainers that the automobile van could be guaranteed to reach its destination sooner than an express train.

I had something to say in my last letter on the subject of motor omnibuses in London. It is satisfactory to hear that before very long London will have a service of some 50 electric omnibuses, which will ply between Maiden Vale and the Marble Arch, and so act as a feeder to the underground electric railway. These omnibuses will of course not run on rails, and who knows but that in a year or so engineers will awake to the fact that tram lines are not at all indispensable in our large cities and towns.

It is really difficult to convince some of our magistrates that a

user of a motor car has any rights whatever on the highways. The case of an excitable horse owner, who summoned an automobilist a few weeks ago, on the ground that an autocar is a nuisance, has been quite put in the shade by an incident which took place at Sleaford. You would scarcely believe it, but nevertheless it is a fact, that a motorist here was summoned for not giving audible warning of his approach when meeting another vehicle. Now this was too much even for a magistrate to swallow, and the case was dismissed; but things are surely coming to a head when the careless driver of an unmanageable brute is allowed to entertain the idea that he can wreak his spite on an unoffending motorist who is complying with the law in every particular. The experience of the Hon. Leopold Cavviney is instructive. While motoring on a deserted road, and slowing down nearly to a crawl whenever a vehicle happened along, he and his companion were pelted with stones by a group of loafers, and were afterwards fined for furious driving to the extent of something like three guineas (about $15.00). At the same court, a drunken driver who had careered down a crowded street, endangering the lives of the community, and even driving on to the pavement, was mulcted in the extravagant fine of ten shillings ($2.50). I cannot leave this subject without mentioning that royalty has at times to submit to the vagaries of the law in its dealings with automobilism. King Leopold was recently stopped for "scorching" in the Bois du Boulogne, but a gentle hint to the "guardian of the peace" was sufficient in this case, and the Royal motorist was allowed to continue his enjoyment of the delights of pace.

The 1,000 mile trial is now a thing of the past, but a fitting termination was the meeting and dinner held in its celebration at the Trocadero, Picadilly, on October 31. The company present was widely representative of the automobile world. Owners of cars, manufacturers and drivers made up an assembly which was certainly unique in the annals of automobilism. There were present members of Parliament, lights of the law, men who have gained distinction in other fields, and the company may be described as typical of the national interest in the automobile. During the evening mention was made by the chairman, Mr. Roger Wallace, Q. C., of Lord Kingsburgh, who, since the trial, has been honored by his Queen in being made a K. C. B. This as a reward for his distinguished services to the country, and let us hope some recompense for his helpfulness to automobilism. Prizes and diplomas were distributed, and during this function the

chairman caused some amusement by his lamentations over the prize money which had to go to America, to the credit of the Locomobile Company. Diplomas were given to the representatives of the New Orleans victorette among others.

In Section II.—that for privately owned vehicles—the success of the Hon. C. S. Rolls deserves special mention. He secured the gold medal for the most meritorious vehicle in the trial, the silver cup presented by Mr. Owens, and a prize of £5 which had gone to the part purchase of a stop watch. In coming forward to receive his trophies, the Hon. C. S. Rolls was greeted with long continued applause, which, in the words of the chairman, showed how high he was held in the estimation of automobilists. He was a thorough sportsman, and had adhered strictly to the rules of the club—and had gained 93 per cent. of marks. A warm tribute to the skill of the different drivers prefaced the distribution of the driving certificates; 60,000 miles had been covered without accident, and the drivers deserved credit for their steady work. A pleasing feature of the meeting was the presentation of an illuminated address to Mr. C. Johnson, who had organized the trial, and who, in the opinion of the chairman, had accomplished his object better than any other man in the country could have done. The address was signed by about 80 gentlemen.

I am glad to learn, on good authority, that London will soon be on an equality with New York as regards the Fire Brigade. The London County Council is considering the question of adopting motors instead of horses. I believe not a few Continental cities have already committed themselves to a system of this nature, and it behooves the greatest city in the world not to be behind the times in this respect. In busy Lancashire, the Corporation of Eccles has decided to invest in a motor-vehicle for the use of the borough, and this example will no doubt be followed by other towns.

The success of the motor vehicle in business depends mainly on the cost, as compared with horses, but the increased speed with which deliveries can be made is also a factor in the case. At present the advertising value of the motor vehicle for delivery purposes can be counted as a point in their favor, but as they become more widely used this feature will disappear and the question of dollars and cents become even more prominent. When it is proved conclusively that the motor delivery wagon will deliver as much merchandise for a dollar as can be done by horses, their universal adoption is assured, and the horse will be released from one more of its toilsome occupations.

Essential Features of a Motor Carriage

WHILE one could enumerate many features which were desirable for automobiles, the most essential ones, after the strength of running gear, is the motor itself. Too many have taken lightness as the one feature to be attained, and sacrificed everything to that end, while as a matter of fact this is not always desirable. When it comes to high-power motors, there are advantages in having weight or mass to absorb shock and vibration.

Probably the most experienced drivers would first demand a motor of sufficient power for the work in hand; next a motor that was thoroughly reliable, and would leave the questions of weight and economy for after considerations. The saving of a few gallons of gasoline or ampere hours of current is of little consequence as compared with the question of getting home or laying up for repairs in some out of the way place. Not that a reliable motor cannot be as economical as the other kind, but the reliability is to be considered first.

Warren's First Auto Ride

BY NED GALLIDAY

MRS. WARREN was one of those individuals who always try to cross the bridge before it is reached. She had imagined all kinds of mishaps would be the lot of her husband when he went in for the "wheel." And now when Peter Warren had been bored almost to death by an automobile enthusiast to purchase a machine he at first refused to think of doing any such thing, knowing as he did how his wife would look upon it, for he knew well that she would think he was absolutely crazy to have anything to do with such dangerous sports. Knowing these things, Peter was inclined to go slow, and when asked by the secretary of the local Automobile Club to accompany them on a run, he replied:

"When the bicycle first came into popularity my wife almost fainted when I told her that I, an old joker of some sixty summers, intended to invest in one. She prophesied that as sure as my name was Peter Warren I would be brought home some day with a few broken limbs, and the outcome would be that she would be left to mourn me as the victim of a new-fangled notion.

"However, after looking at a great many of the best make

wheels I finally settled on one which suited me exactly, and after riding it for nearly eight years I am still alive and kicking."

Warren, however, had had, when he commenced riding the wheel, troubles of his own to pass through before his better half had become reconciled to it, but having wheels (in his head) he had his way, and now stood as a monument to the safety attending bicycle riding, when properly indulged in.

So when the automobile craze struck the town of Elizaville, he was an apt pupil, having experienced the delights of the wheel. He was not the owner of a horseless carriage, but to hear him talk one would imagine he was. He looked upon the automobile, however, with much more skepticism than he had the familiar wheel. There was more to it he thought; then again it cost considerable more, and like a great many of us Peter was not just able to put money into a motor vehicle as readily as he did in a wheel.

Gradually the automobile found converts in the town and a club was formed. The initial run was announced, and our friend Warren was there to see them start off. While standing around looking at the various machines, the Secretary, who was a genial fellow, invited him to go along.

"I would like to go Sec., but it is pretty cold, and I do not feel very good. Perhaps it would knock me out?" was his reply.

"Oh! I guess you can stand it all right; we are going to have a jolly time," answered the Secretary.

After a little persuasion he decided to accompany them, but he made the same mistake that many of us make, viz., he entirely forgot to notify his wife, with the result that not only did he suffer remorse for such conduct, but Mrs. Warren also was in a very undesirable frame of mind when he failed to put in an appearance at luncheon or dinner.

Warren, however, had enthused over the wheel, and now he had been given a chance for the first time to try an automobile in a practical way. The club secretary had talked automobile to him several times before this, but Warren never seemed to bite.

The morning of the run was cold and it looked as though snow would fall before the gay automobilists were far from the starting point. This, however, was not enough to daunt our hero. He meant business, and his whole soul was in the run before him. He dreamed that they were at the objective point, about seventeen miles distant, and had covered the distance in about as many minutes. And this without any

mishap. Warren was like a great many others in that he was apt to forget that automobiles do sometimes fail to respond to the movement of a lever, or the turning of a wheel.

Soon the jolly crowd of chauffeurs were outside of the confines of the city, and then it was a case of every man for himself, each trying to outdo the other—although, remember, it was understood beforehand that no racing should be indulged in. When they got out on the road, however, this order was forgotten. Warren was seated in a gasoline vehicle, smiling all over his face and half way down his back, just tickled to death by the peculiar fascination of his first automobile experience. Just as he was enjoying himself the vehicle crossed a network of trolley tracks, which shook the occupants quite a little.

"Great Cæsar, what have we struck?" exclaimed Warren.

The genial operator tried to explain to our friend Warren the cause of the jolting, but it was hard to convince him, and it was noticeable after that as trolley tracks loomed in sight he would place one hand on the back seat and the other on the front and raise himself until the tracks were passed.

Warren was tickled immensely by the manner in which the vehicle sped along, apparently on clouds of dust. Just after getting out of the city the Secretary's automobile was about eleventh in the procession, and consequently received a good share of dust, which made Warren declare that he thought it would be a good scheme if some kind of a street sprinkler could be carried on the back for the benefit of those following behind.

Everything was lovely, all hands were drinking in the good air, enjoying the surrounding scenery, when something went wrong with the works of the motor of the Sec.'s carriage. A stop was made, the passengers alighted, covers were removed and search made for the seat of trouble. The Sec. threw off his goggles, donned a pair of gloves suitable for working about grease and oil, guards were removed, and finally he succeeded in locating the trouble. Warren stood by looking on for a while, then said:

"Sorry, old chap, that I cannot assist you, but the fact is I do not know anything about such things." He realized how inconvenient it would have been if Sec. had not been there.

"I tell you, sir," he continued, "a fellow wants to know how to handle these things when not running as well as when skidding along at twenty or twenty-five miles an hour."

After a delay of about twenty minutes the jolly party resumed its

journey, feeling pretty blue over the fact that they would probably arrive last, but great was their joy, when about half a mile ahead of them they saw Mr. C.'s machine stalled, with a fellow lying under it on his back trying to locate the cause of breakdown. They would not be last in after all. The machine owned by Mr. C. was the crack one of the club.

They were gliding along and came to the intersection of more trolley tracks, which had not been seen by Warren. He was shaken up considerably, and just as he was composing himself, a crowd of schoolboys standing on the corner yelled in unison:

"Wouldn't that jar you?" This certainly was a striking example of the eternal fitness of things.

When home was reached the three occupants presented woe-begone appearances. It of course is essential that an automobilist be proof against water, but said Warren:

"There is a fortune in store for the man who can devise a dust proof style of clothing," for although they had taken every possible precaution, the dust had crawled into many corners which they imagined dust proof.

Warren arrived home about 8:30 P. M., and found his wife in a great state of mind. He was, however, by this time an enthusiast on the automobile. He explained the cause of his abscence.

"Oh! Peter!" were the first words of Mrs. W. after hearing his explanation, "how could you do such a thing when you knew the danger attending such sport?"

"My dear," he said, "to spin along at a twenty-five-mile gait makes one feel as though he were really living. You see, it was this way. I was asked to go by the Sec. At first I refused, as I am naturally skeptical about new fangled notions. Finally I consented, and, my dear, I started out skeptical and returned a faithful believer in the horseless carriage."

Mrs. W., however, could not see it in just the same light as her husband. Not very long afterward, however, she was persuaded to try an automobile ride, and was won over also, Now you may see Mr. and Mrs. W. spinning along in an automobile, not the Secretary's, but their own.

It is all very well for folks to stand off and declare they would not ride in an automobile on account of supposed danger attending their use, but it is a fact that "once tried, always used," is just as ap-

plicable to the automobile as to a great many other things, and people who are all the time belittling the horseless carriage usually become its warmest friends after their first experience.

The Ferry Edict

There is wailing now in Gotham
'Mongst the men with "automos"
Who have friends in northern Jersey
Where they often used to go.

Where the roads are all macadam
And the scenery is grand,
With its many hills and valleys
And the streams on every hand.

But a barrier has arisen
Worse than any Chinese wall,
And the friends across in Jersey
Now no longer have a call.

For their "auto" friends in Gotham
Hear the gateman's words serene:
"If you want to cross the ferry
You must dump your gasoline."

R. E. MARKS.

"We veterinary surgeons in New York are in hard luck," said one of them. "With the cable cars, the trolley cars and now the automobiles, our business has gone to the dogs, metaphorically speaking. Soon there will be as many surgeons as there are horses. It's nearly as bad as that now, and as automobiles become cheaper and the likelihood of airships coming in to supplement them grows, the prospect for us isn't a bright one. Lots of New York veterinaries are giving up the attempt to make a living here and are going West." Other veterinaries said that this man was a croaker. "We haven't any cause to complain," said another, "and won't have while nearly everybody keeps a dog. My only grievance is against those mean-spirited flat-house owners who discourage dog keeping. But even they don't bar cats, and veterinary surgeons have lots of pet cat patients."

HOW HALLIDAY'S PREJUDICE WAS OVERCOME.

BY EUGENE WOOD

OF course it made a great impression on all the people in Minuca Center, Ohio, when it was noised abroad that "Doc Perry had bought him one o' these here what-you-may-callums,—funny I can't think of the name for 'em—oh, you know—one o' these here horseless carriages," but nobody took it quite so much to heart as old Jone Halliday, who has the Silver Spring stock farm, out there by the covered bridge, about three miles this side of Bellpoint. Old Dr. Perry, Dr. Alonzo B., the present Dr. Perry's father, and Jonas Halliday were great cronies and often used to talk about how it would be if, when they grew up, little Austin F. should marry little Eunice. But however the fond fathers might plan, the children did not seem to quite see it. Austin, like all right-minded boys, could not be bothered with little girls, especially a baby eight years younger than himself, and he used to feel kind of ashamed when anything was said about it. About the time when he was getting ready to go up to Cleveland to attend medical lectures, she was a long-legged, awkward bean-pole of a thing, as bossy and self-important as any other girl of fourteen. Austin F. rather fancied the mature type of women at the age he was then. When it came her turn to develop, she was at Smith College and he was diving into the practise his father had left to him and studying hard as any young physician must that expects to amount to anything, no matter if he is the honor man of his class. I think Eunice must have taken some kind of a post-graduate course. Anyhow I know that Dr. Perry did not see much of her until she was about three or four-and-twenty, and had come home to the Silver Spring farm to stay. Being himself about thirty-two, Dr. Perry was of a good marriageable age, and several persons in and about Minuca Center acted on that hypothesis. Among them was old Jone Halliday. Soon after

his daughter's return he began to be sickly, and that was strange, for he was a red-faced man 200 pounds in weight, six-foot-two in his stockings, and a hearty eater. It got so that if he cut his finger it seemed that Dr. Perry had to be called to dress it. He was always developing some little ailing or other. Along about 3 o'clock of a fine afternoon he would come into the sitting room and stretch out on the couch with a suffering sigh.

"What's the matter, Pa?" Mrs. Halliday would ask. "Aint you feelun very well?"

"Not very. I don't know what's the matter with me here lately. I got a kind of misery in my leg, and then it flies up to my arm and all over."

At first Mrs. Halliday, who, all her married life long, had ineffectually sought a chance to doctor her husband, suggested boneset tea, and once she put some on the kitchen stove to stew, but when she brought it in, blowing on the saucerful to cool it, he astonished her by rising up and vowing that he would not swallow any such wash as that.

"I want a reg'ler veterinary," he declared. "I aint a-goin' to be dosed with any stable remedies at such a time as this. If I'm a-goin' to be sick I'm a-goin' to be sick proper. That there boneset tea may be the very thing that ud set me off into a hard spell o' sickness. You don't know."

"Why, Pa, it can't do you any harm."

"Well then, it can't do me no good. What I want is active treatment. You call up Doc Perry and tell him to come out here and gimmy some condition powders or sumpun. Tell him they's no special hurry about it, but if he happens to be out this way in course of the afternoon, why drop in."

He was always much improved before the doctor got there, and by the time dinner or supper was served (the same meal went by both names, according as the old folks remembered) his appetite was as good as ever, pulse and respiration normal. The doctor generally stayed well into the evening. Miss Halliday played quite nicely and sang beautifully, besides conversing most agreeably. Her father was a good talker too, when he got going on horses, and especially trotting horses, and the time passed so pleasantly that Dr. Perry often called when Mr. Halliday showed no symptoms of illness, but as soon as he began to sigh Mrs. Halliday always made extra preparations for the evening meal and brought up another jar of quince preserves from the cellar. He was very fond of quince preserves, Dr. Perry was.

I said that Mr. Halliday especially talked trotting horse. This was so, although he bred draught horses and blooded cattle. The country was rapidly going to the dogs in Mr. Halliday's estimation because it had lost interest in the trotter and now cared only for running races, for which he had the finest contempt. He told all the old trotting-horse stories, such as how Lazarus and Defendum got their names. They were new to Dr. Perry and they may be new to you.

"This here Lazarus horse," said Mr. Halliday, "didn't get his name till after his first race. Then when somebody asked the owner what got into him to call a horse by that name, 'Why,' says the owner, 'on account o' the way he finished. Lazarus come fourth.'

"Then this here Defendum, when his owner come to name him, says he to the stable man: 'What are they about this colt that's different from other colts?' The stable-man studied awhile and then he says: 'I don't know, without it is that he's deef-and-dumb.' So the man wrote it down that way, only, bein' a horse man, he couldn't spell as well as some and he got it down the easiest way: Def-en-dum, and there you are."

Mr. Halliday was cut to the heart when bicycles became so popular but life took on a more cheerful aspect when their vogue passed and he declared, with a total disregard of the fact, that he had always said the craze couldn't last, the fact being that he had been afraid it would. But his joy was tempered with the doleful recognition that automobiles were coming in and apparently were never going out.

"Darn those auto—auto—" he began one evening.

"Autobiographies?" suggested Dr. Perry, who was present.

"Oh, you get out! Aint you ever goin' to quit riggun me about that?" Mr. Halliday had once been taken in by one of these county history fellows and it teased him to have the subject mentioned. "Automobiles is what I'm talkun about. Ought-to-mob-'em is their name by good rights. Runnun about the country skeerun the horses so they won't be fit for nothun afterwards. I don't know what possesses folks to want 'em. I'd just as lives ride on the county road-roller or one o' these traction-engynes that hauls thrashun machines around."

"I don't know," said Dr. Perry, "I was thinking of getting one." He hadn't thought of it at all, but he liked to get Mr. Halliday going.

"Why, look here, Doc, you don't want to get no such notion into your head. It's all foolishness. Look how much they cost. Thousand dollars or so."

"Well, you know yourself, Mr. Halliday, how necessary it is that I should get to my patients as quickly as possible. I guess if I was to buy a span of horses that could go from 25 to 40 miles an hour and keep it up for 100 miles or so at a clip, I'd have to pay considerable more than $1,000 for them."

"Huh! you couldn't get 'em if you was to pay a million. But sposun you was to get throwed out when you was goin' that fast, how about that?"

"It couldn't any more than kill me, and any horse can do that. I don't know that a machine is any more dangerous than a nervous horse. What do you think about that, Eu—Miss Halliday?"

It may be regarded as significant of new relationship that Miss Halliday, brought up as she had been, should have replied: "Nobody can tell what is in a horse's mind and what he means to do next. Whereas a machine, tried and tested, will always do the same thing under the same conditions." It may have been Smith College that made her formulate her opinion so concisely but it was surely something else that made her take sides with Dr. Perry against her father.

The discovery of a heretic in his own home caused Mr. Halliday's jaw to drop and his eyes to bulge. Then he shut his mouth firmly, got up and left the room. He was very much displeased but I don't know that his daughter and Dr. Perry were. What their sentiments were Mrs. Halliday seemed to have guessed for she said to her husband when he joined her in the sitting-room.

"Well," said she, "I was wonderun if you'd ever take the hint. How would you 'a' liked it if Pap had set around and set around when you was courtun me?"

Mr. Halliday hadn't a word to say for himself. After taking all the pains he had to get Dr. Perry within the sphere of influence of Eunice and then to sit there and monopolize the evening himself. He pulled off his boots and went to bed. For a week after that he was in rugged health. But it is perhaps needless to say that at this stage of the proceedings this did not prevent Dr. Perry from calling.

It must nave been the inborn cantankerousness of the human creature that impelled the physician to send for catalogues, circulars and printed matter on the subject of automobiles, so that he could stir up Mr. Halliday with a skilled hand. It certainly was the inborn cantankerousness of the equine nature that got his mare Flora to begin acting up so that he never dared take her out on long night rides, and the discovery that she was thus favored was daily fixing the habit

more and more firmly in her. It wouldn't do to put all the work on Dolly and his practise was so large that he really needed two horses. The natural result of both forces working together was a very serious interest in motor vehicles and the upshot of it all was that Dr. Austin Flint Perry bought the first automobile ever seen in Minuca Center. But he didn't say anything about it to Mr. Halliday. He meant to surprise him with it.

The pitcher that goes often to the well gets broken at last, and from playing off sick Jonas Halliday actually got sick. About the time of the January thaw, which was about the time Dr. Perry got his voiturette, Mr. Halliday caught a cold which developed into such another case of quinsy sore throat as he had not had since he was a young man. Strangely enough, when a real ailing made its appearance he would have nothing to do with a doctor. It wasn't anything but quinsy anyhow, he said, and doctors aren't any good for that, which is true enough, but as inconsistent with his behavior as truths generally are. Also in that week there had come over the sunshine of the young people's life that cloud that often appears, that little cloud of a disagreement. Why is it that in those heavenly months, all too brief, when the young man says to himself with an exulting soul: "She loves me. Me! And she loves me;" and the young woman dreams by the hour of the strong, noble nature that so wonderfully finds something in her to admire, why is it that they must now and again forsake those Elysian Fields of pure romance for the sordid earth? I cannot understand unless it is that we cannot live in that upper air, but must feel the solid, if sordid, earth beneath our feet, at least to gather strength for another upward flight. So it was with these lovers. As if charged with the same electricity they had repelled, each the other, for a moment. But only for a moment, for each was longing for the other, though foolishly dreading to seem eager to make it up.

Now quinsy sore throat is a most exasperating illness. The victim is not sick enough to go to bed and too sick to stay out of it. Books and papers lose their interest (they never had much for Jonas Halliday). You can't smoke; it hurts too much to hold the cigar between the teeth. It is as much as the contract calls for to open the jaws enough to get a drink of water, and eating is simple torture. It seems to a man with the quinsy that he has to swallow every four ticks of the watch, and every swallow is such pain that he is almost ready to take the pledge against it for life. Ordinarily when anything got on Mr. Halli-

day's nerves, as this did, he could be remarkably fluent in expression, and that is a great relief, but quinsy won't let a man talk. Undoubtedly the worst feature of it all is that it isn't dangerous. A person could stand it better if he knew his case was serious, but when a man can't read, can't eat, can't smoke, can't drink, can't talk and yet will be good as new in a few days, after all that suffering, it looks a good

"Hey, Doc! Here's a Case for You!" See page 35.

deal like imposition on patience. When on the eighth day the tonsil showed no signs of coming to its senses, Mr. Halliday at last consented to have Dr. Perry called with instructions to bring his lancet.

The heart of his daughter leaped within her, though she would not have owned it if her mother had asked her, which, I am glad to say, the old lady was too wise to do. While the doctor was coming,

Mr. Halliday mumbled to Eunice that he wished she would look into his throat to see if she could detect a hopeful speck on the tonsil. She was trying to wedge the spoonhandle in between his teeth when, through the window at which they stood, they saw Dr. Perry open the gate at the end of the driveway that led from the Bellpoint pike to the house. Mr. Halliday looked hard. If he could have spoken, he would have said: "Where's his horse?" But when he saw the vehicle come up the drive, self-propelled, his jaw fell in spite of the twinge it gave him. He rushed to the door and flung it open, and as the physician came up before the broad piazza, leisurely tack-tacking, Mr. Halliday bawled at him in a thick voice in rage inarticulate. A spasm of pain stabbed him, but in that moment his voice cleared and he was a well man.

"Get out!" he shouted. "Get out o' here! You and your damned old mowin' machine. I won't have you about the place. Home with you!"

"Why, what's the matter?" asked the physician, smilingly preparing to alight. He thought Mr. Halliday was joking.

"There's just this the matter, that I won't have you around my house with that box o' tricks. Git now! Git, I tell you! Damn horse-scarer!"

"Why, Papa," expostulated his daughter. "you must not talk so to Dr. Perry. He's our physician, our friend, my—

"I know well enough who he is and what he is," shouted Mr. Halliday, throwing her hand off his arm. "You go along into the house. That man knows what I think of them automobiles, and he comes here with one to insult me. Me, and I raise horses to sell. Don't you ever show yourself inside that gate again as long as you own that thing or you and me's goin' to have trouble. And I wouldn't let you marry my daughter if you was the last man on earth. Now you put for home before I get the shotgun."

Mr. Halliday turned and went into the house, slamming the door viciously behind him. The automobile slowly went around the looping carriageway, leisurely tack-tacking. At the curve, Dr. Perry looked around once more, and at the window he caught the wave of a handkerchief. As he whizzed down to the highroad, in his anger he fancied it was a satirical farewell from Eunice, but as he remembered the expression of her face and the way she rebuked her father for his rudeness, it dawned upon him that she loved him as much as ever, and that she had forgiven him. She had forgiven him! He exulted at

that. He forgot that he had dramatized how he would forgive her. He saw now that he must have been a brute or she would not have been offended by him. And yet she had forgiven him. Joy that so angelic a being loved unworthy him overtopped the anger of her father.

Mrs. Halliday and Eunice recognized in the monologue that Jonas kept up for a day or so the ebullition of seven days' wrath and held their peace. They hoped for better things when he calmed down. But Mr. Halliday's general and professional grievance against motor vehicles as an attack on his business took on a personal grudge against Dr. Perry, who he somehow managed to blame for his quinsy too. If he had loved the young man with all the fervor of his old comradeship with the father, and added thereto the admiration he felt for his learning and the affection for him as a prospective son-in-law, he hated him now as intensely, with all the bitterness and contempt the losing side can feel for the winner. He vowed loudly and often that Dr. Perry shouldn't marry his daughter, if he had anything to say about it.

Mistaking, as men will, a woman's silence for consent, he repeated that statement just once too often. On that occasion, Eunice spoke up: "It seems to me that you haven't anything to say about it."

"Why, what do you mean, Miss?"

"I mean this, that the doctor has the first say in the matter. Perhaps he doesn't want me for a wife."

"Don't want you! You're ten times too good for such an upstart, and I'll tell him so. Comun up to my house on his old road-roller! I'll show him. If he didn't want you, what was he taggun around after you so much for?"

"I thought he called on you when you were ill," breathed Miss Halliday demurely, looking down as she made the shot. Her father snorted angrily.

"And then," resumed the young woman from Smith College (I think it must have been in Logic that she took that post-graduate course), "if he does want me for a wife he will probably find a way to say so in spite of you."

"Not if I'm around, he won't."

"Probably not. But you're not around all the time, and neither am I."

"I'll—I'll lock you up in your room."

"I think not," said Miss Halliday, "I think not, at least not while there are courts in the State of Ohio. Even though I am a woman and can't vote, I am a citizen and cannot be imprisoned with-

out due process of law. I am your daughter, but I am also my own self."

He glared at her.

"Well, then," proceeded the young woman from Smith College as coolly as if she were debating a matter of pure academic interest, "if, as I have shown, Dr. Perry has some say in the matter, let us suppose that he has said it. Then I have some say as to whether or not I'll accept him."

"You sha'n't say it."

"Not if I refuse him?"

"Well, —

"I can't tell till he asks me whether I'll have him or not—

"You can tell whether you want him or not."

"I was going to say that my freedom of speech is not to be abridged. That is a right guaranteed to the citizen under the Constitution."

(Yes, I remember now. It was Constitutional Law and Logic that Miss Halliday took the post-graduate course in.)

"I'll put you out of the house if you marry that man!"

"I had expected when I got married, if I ever did, to live at my husband's home."

During this passage at arms, Mrs. Halliday had been pleading: "Now Pa! Now, Pa!" all in vain, but when he said he'd put his daughter out of the house, Mrs. Halliday would not be restrained, but burst out with: "Why, Jonas Halliday! Are you plumb crazy? Wouldn't you look pretty putting your own daughter out of the house? Be a fine thing, wouldn't it now, for all the county to talk about? I just see you doin' it. I just see you doin' that very thing. And you talkun about who's got the say about this and that and t'other. Yes. Well. I'd have you know I've got something to say. This house is in my name, and Euny is my daughter as much as she is yours, and this will be her home as long as I'm alive and she wants to make it hers. Good land! What's got into you, Pa? Man that thinks as much of his daughter as you do, actun that way, I'm ashamed of you. Why, it's ridiculous. And furthermore, I won't have any more such talk. Now. Laws! If folks was to hear us, they'd think we was quarrelin'. How much did Enright ask for that little bay mare o' his?"

This was the only pitched battle that was fought on this issue, but peace was still far from being declared. It somehow got into Jonas

Halliday's head, that, after all, everybody else concerned had really more to say than he had, but he set his jaws firmly and resolved to balk the match if he could. Perhaps the truly emancipated woman will feel provoked at Eunice Halliday to learn that, after her bold stand for the right to live her own life, as soon as her father had left the house, she sat down and had as good a cry as any woman that has not had the advantage of a post-graduate course in Logic and Constitional Law. Her mother comforted her more with cooing, sympathetic tones than words, but she told her husband afterwards: "She's just you to the dot; just as bull-headed, every bit and stitch. And she's goin' to have her own way. Now, you mark. You might as well give in now, while you can."

"Well, if he gets her and I'm bound he sha'n't," began Mr. Halliday and stopped for a moment as he realized that he had weakly confessed the possibility of defeat for him, "if he gets her, he'll have a lovely time of it with her."

"Yes. Well." Mrs. Halliday tossed her head. "I don't know's it'll hurt him any to have a wife that can spunk up to him. It ud 'a' been all the better for you if I hadn't been quite so poor-spirited. You know what I told you all the time about that county history fellow, but you would have your way and you see what come of it."

Mr. Halliday groaned. Was he never to hear the last of that?

"And I'll say this, I don't like the looks of that little bay mare you bought of Enright. You're goin' to have trouble with her, now see if you don't."

Dr. Perry did not call at the house again, but they often saw him shooting by like a meteor. One day as Mr. Halliday and Eunice were out driving behind the little bay mare Jonas bought from Enright, the doctor passed them in his voiturette. Jonas seized the lines and prepared for a runaway, but the mare only moved her ears and kept up her gait without breaking. Jonas was so busy looking out for what did not happen that he missed the sight of his daughter's recognizing smile and the doctor's responding salutation. But he was just as vexed as if he had seen it, because the mare did not act up. He would have been still more vexed if he had known that she was thoroughly used to the sight of the automobile, for Eunice had her for a saddle-horse and, on her rides it was Miss Halliday's invariable good fortune to encounter the doctor making his calls. While a horse has as little sense as some human beings, it still has sense enough to lose its fear of a thing known to be harmless.

Mrs. Halliday knew all about these meetings, even if her husband did not. After that one tiff of theirs the lovers seemed to have found out that the opposition of Eunice's father was about all that the course of true love needed to keep it from running too smooth. So by the time the apple-trees began to mimic the departed snows and the air was filled with the mysterious perfume of the wild-plum thickets and the long-drawn fluting notes of the turtle-dove, a certain question was asked and answered in a way that made two hearts beat deep and strong. (Even in that happy moment Dr. Perry noted the effect it had upon his pulse and respiration.)

"Dr. Perry has asked me to be his wife," said Eunice to her father, "have you any objections to him?"

"You know well enough I have," he thundered and was going on, but she stopped him with:

"He says he wants me to marry him, and—Papa, I love him." She looked at her father through tears, but he avoided her gaze.

"Now, Eunice, you know what I said. You sha'n't marry that man."

"Is it because he isn't the right kind of a man for me to live with?"

He was silent.

"Is it because you think he can't provide for me? He has a good practice, but even if he hadn't, I'd be willing to share poverty with him."

He was still silent.

"Then it's only because he's got an automobile that you don't like him?"

"Now, Eunice, I'm not goin' all over that again." This with a fine, lofty air of dismissing the whole subject.

"That's all the objection you have to him, isn't it?"

Mr. Halliday was apparently absorbed in *The Horseman*.

"Do you give your consent then? Mamma does."

"No, I don't."

The girl's eyes filled with tears. "Papa, don't you wish me to be happy with the man I love?" she asked and put her arms about him. He shook her off, but I will do Jone Halliday the justice of saying that he felt ashamed of himself.

"Very well then," she said, "I'll take my own way and marry him anyhow."

"Well, you won't."

"Well, I will."

Their eyes met now, flashing fire. Never before had father and daughter looked so much alike, though Eunice Halliday was acknowledged by all to be "the very spirit and image of her daddy."

After that no more was said, but each watched the other like a hawk. To strike at her through her lover, Mr. Halliday tried to get the road commissioner to keep automobiles off the county roads, but Mr. Allbright, being a politician, did not see how he could do that without ruling out traction engines, and hemmed and hawed and dilly-dallied in the most shameful manner.

I don't know if you ever tried it, but there is a lot to arrange about a wedding, and when it has to be solemnized under such circumstances as those attending that of Dr. Perry and Eunice Halliday, it complicates matters extremely. Mrs. Halliday grieved greatly for she had planned all her life long to have Eunice married off in grand style at the Center Street M. E. Church, where there was a big organ and a high ceiling so that Mendelssohn's Wedding March could have all the room it wanted to spread itself as it came crashing down the scale from its initial chord. She had pictured how fine Jonas would look in a "dress suit" and white kid gloves, stepping up when the preacher says: "Who giveth this woman to be married to this man?" But all that had to go by the board now, and she was not to see her daughter arrayed in the glory of white satin, tulle and orange-blossoms, nor to feel the flutter of a mother over all those fine fixings. There was a grey traveling frock and some other things, but that was all. Still there was some fun in it; it was just like Christmas at the wrong time of the year, having to make things on the sly and whipping them out of sight whenever Mr. Halliday came in. But it was all done at last and on a day when everything was ready for the bride, the new home, the marriage-license, the preacher, the ring and all, Mrs. Halliday sent Jonas with a sample of Turkey red calico to Bellpoint to get four yards more of exactly the same shade. When he was gone a little while she went down to the front gate with Eunice and when something came up the road, tuff-tuffing, the mother kissed the daughter with as many tears as if she were never to see her again in this world and went back to the house. She had not been there long when she heard Mr. Halliday call out: "Euny! Mother, where's Eunice?"

"Why," said Mrs. Halliday tremulously, "I thought you'd gone."

"Yes," he said, "but I turned back. I thought maybe Eunice would like to go for a drive. Where is she?"

"Why—why—" stammered Mrs. Halliday guiltily, "she was here a minute ago."

Mr. Halliday snuffed the air. "I smell gasoline. Has that fellow with his polecat-trap been here?"

Mrs. Halliday could not keep from reddening. Her husband did not need words from her. He took the hint. Leaning forward he gave the little bay mare the whip. She leaped and laid back her ears.

"Oh, Pa! Do be careful," screamed Mrs. Halliday, but Jonas never heard her. The buggy just missed the gatepost by the fraction of an inch, but he did not heed that either. He was laying on the lash and following the scent of the gasoline along the road. The automobile could go fast, but the little bay mare could go fast too. He might not get to the preacher's in time to stop the ceremony, but he could have the satisfaction of horsewhipping the sneaking hound right before everybody.

Now, of all days in the world, it happened that on that particular day the cigarmakers had their annual picnic in McLaughlin's woods. Old Mrs. Hofmuller, who had three sons working in the factory and who always attended the picnic, was a tidy old soul, and nothing must do her but she must shake the crumbs off the table cloth over the fence into the road just as Jonas Halliday went tearing by. The little bay mare, unused to the whip, was already running away, if the truth was known, but at the sight of that terrible white thing fluttering out at her she gave a wild lunge to the other side of the road, overturning the buggy and throwing Halliday out. He had the lines wrapped about his hands and could not cast them off. The crazy horse kept on in her flight, dragging him nearly half a mile before the stubbed splinters of the broken buggy stuck fast in the roadway and held her. When some of the cigarmakers caught up with her, she was kicking and screaming, and Halliday lay unconscious in the dust. The men dragged him out of harm's way and laid him on the turf, while two or three ran back to the grove for a bucket of water. As the others stood staring, not knowing what else to do, an automobile came whizzing up the road.

"That's Doc Perry," cried one of the men, waving his hat. "Hey, Doc! Here's a case for you!"

The physician stopped and sprang out. "It's your father!" he called to his new-made bride.

"Oh, I knew there was something that made me want to come right back home," she cried. "Don't—don't tell me he is dead. Oh Papa, Papa!" She knelt at his side in an agony of self-reproach.

"Not, he's not dead. He's badly hurt though. Seems to be a fracture of the femur. Possibly of some ribs, too." The physician pressed on the man's chest. He groaned automatically though unconscious. "We must get him home at once."

Dr. Perry blessed the day he had selected a vehicle with a front seat, for with the cushions and some boards torn from the fence, he was able to extemporize a sort of litter for the injured man, and from the broken lemon box of the picknickers he prepared temporary splints for the broken leg, to keep the parts in place till he could be got home.

Jonas Halliday opened his eyes to find himself lying in his own bed, his daughter kneeling by him and his son-in-law holding his hand and noting the strengthening pulse.

"Oh, Papa, you forgive us, don't you?"

"You haven't lost your daughter; you have gained a son," said Dr. Perry.

Jonas turned his eyes to his wife. She nodded her head in answer to his unspoken query. Then the big fingers of the horseman's hand closed on those of the automobilist with a sympathetic squeeze.

"I reckon," he said painfully, "that—if—ouch! It hurts me to get my breath—if you hadn't—come along—just when you did—with your—old traction engyne—I mightn't have—" he smiled, but did not finish.

"That's even so," said Mrs. Halliday, with firm conviction. "You know I told you to look out for that little bay mare."

The Civilizing Influences of Roads

THE history of roads is a history of civilization. Good roads are unmistakably a sure index of the various grades of civilization. This is a very live subject just now and it gives us pleasure to publish the following extracts from an address on the subject delivered recently by Henry M. Leland. He said :

Lord Macauley declares that of all inventions, the alphabet and printing press alone excepted, those inventions which abridge distance have done most for the civilization of our species; and this applies to good roads, even in a greater degree than to the railroad and steamboat.

Every improvement of the means of locomotion benefits mankind morally and intellectually as well as materially. "The road," says Bushnell, "is that physical sign or symbol by which you will best understand any age of people. If they have no roads they are savages; for the road is the creation of man and a type of civilized society. As roads are the symbols of progress, when we trace back the history of the race to the dawn of civilization, we find that the first sponsors of art and science, commerce and manufacture, education and government, were the builders and supporters of public highways."

The two most ancient civilizations, situated in the valley of the Nile and the Euphrates were connected by a commercial and military highway leading from Babylon to Memphis, along which passed the armies of the great chieftains and military kings of ancient days, and over which were carried the gems, the gold, the spices, the ivories, the textile fabrics, and all the curious and unrivalled productions of the luxurious Orient. On the line of this roadway arose Nineveh, Palmyra, Damascus, Tyre, Antioch and other great commercial cities.

On the southern shores of the Mediterranean the Carthaginians built up and consolidated an empire so prominent in military and naval achievements and in the arts and industries of civilized life, that for four hundred years it was able to hold its own against the preponderance of Greece and Rome. These Carthaginians were systematic and scientific road makers from whom the Romans learned the art of road building. The Romans were apt scholars, and possessed a wonderful capacity not only to utilize prior inventions, but also to develop them. They were beyond question the most successful and masterful road builders in the ancient world, and the perfection of their highways was

one of the most potent causes of their superiority in progress and civilization. When their territory reached from the remote east to the farthest west, and a hundred millions of people acknowledged their military and political supremacy, their capital city was in the center of such a network of highways that it was then a common saying: "All roads lead to Rome."

From the forum at Rome a broad and magnificent highway ran out towards every province of the empire. It was terraced up with sand, gravel and cement, and covered with stones and granite and followed in a direct line without regard to the configuration of the country, passing over or under mountains, and across streams and lakes on arches of solid masonry.

The military roads were generally sixteen feet wide, and sometimes they were double, with an elevated center. Stirrups were not then invented, and mounting stones or blocks were necessary accomodations; hence the lines or roads were studded with mounting-blocks and also with milestones. Some of these roads could be traveled to the north and eastward for two thousand miles; and they were kept in such good repair that a traveler thereon by using relays of horses which were kept on the road, could easily make a hundred miles a day on horseback.

Far as the eye could see stretched those symbols of her all-conquering and all-attaining influence, which made the most distant provinces a part of her dominions, and connected them with her imperial capital by imperial highways.

But to come back to our own country, the United States of America, the country which some of our friends on the other side of the water have been telling us for a quarter of a century, was a third-rate power; that she cut but little figure among the great nations of the earth because of her small standing army and an almost unknown navy.

The world kept their eyes upon us the past two years and were surprised. They learned that it was the nation that ordered its admirals to go out and capture our navy at sight, that found out that they were the fellows that had no navy. Our admiral quietly said, "Gridley, when you are ready, fire." Gridley was ready; he fired and the other fellows' navy hasn't been heard of since.

The United States is the grandest national realization that ever happened. This little country of ours has nearly as many miles of railroads as all the balance of the globe. She raises more wheat than

any other country by many millions of bushels. We have many millions more comfortable houses and homes than any nation on earth. We raise more cattle by millions on millions than any other country. We have in operation more steam power by millions of horse-power than any other people that the sun shines upon.

And the last item that I will mention, though they could be multiplied, is that the thirteen struggling, oppressed colonies of but little more than a century ago, to-day have more wealth by many, many millions than any other nation on the round globe, including the United Kingdom of Great Britain.

And yet, fellow American citizens, while with honest pride we can state facts like these, we are forced to admit that we have the worst roads, as a whole, of any country on earth. Confession is good for the soul and we will not deny the fact, we have thousands of miles of the worst roads that lie out of doors, and a smaller percentage of our roads are modern, high-grade up-to-date roads than any other people on earth. Yet we are not discouraged. When America once arouses itself and realizes these things and decides that we will have the best roads, and the most miles of good roads; when American enthusiasm is once stirred to action in this matter, its skill and its push will produce good roads so rapidly that in half a century we will have more miles of choice, superb roads than any of the old countries of Europe.

The Long Island Automobile Club had an evening run Monday, December 3. Among those present were Mr. C. W. Spurr, secretary, in a gasoline vehicle; L. R. Adams, president, in a Winton; Mr. Robert Darling, vice-president, in an electric machine; F. G. Webb, treasurer, rode in a steam vehicle. The run ended at the Crescent Athletic Club, 27 Clinton Street, Brooklyn, where entertainment was provided by the president and vice-president of the club. Lectures have been arranged for and the club house is being made ready for the comfort of members. Storage for automobiles will be provided at actual cost to the club.

(We desire those interested in both the manufacture and operation of Automobiles to send in for use, in this department, whatever they think may be of interest to us or our readers.—EDITORS.)

A Good Section for Automobiles

WE hear so much about the good roads round about New York, Long Island, New Jersey and Staten Island that their praises have become somewhat of household words with a great many, but there are other sections within easy reach of New York which offer charming facilities for automobilists. Permit me to call attention of your readers to the beautiful roads which are to be found in Dutchess County, New York. Some of the most picturesque scenery in the land is to be enjoyed there, as one travels along the beautiful roads. The Woods Road, for instance, from Tivoli, Dutchess County, to Germantown, in Columbia County, is a most delightful one, commanding a view of the majestic Hudson River for the greater part of its length.

The roads are well kept, and let it be said, to the credit of many of the farmers, there is more of a kindly disposition on their part to maintain them in good condition than is found usually.

It is true that many hills are found, but none of them are so steep as not to be capable of ascension by the average automobilist. Most of the hills, however, are found when traveling in an East or West direction, while the roads running North and South are usually level.

Being familiar with the roads up here, having traveled over them considerably, I thought it might do some good to call the attention of your readers to them. One can get a great amount of pleasure and enjoyment out of a few days' touring through Dutchess County.

Say one started from Poughkeepsie, the Albany Post Road, upon which one sees the old English mile-stones, could be followed, parallelling the Hudson, passing through Hyde Park, then touching Staatsburg. Just after leaving Staatsburg the Post Road leaves the river

and passes through the pretty little town of Rhinebeck. The next town of any size is Red Hook, a picturesque place with 900 inhabitants.

If, when Red Hook is reached, our automobile friends would turn directly west, to Barrytown Corners, and upon reaching the last-named point go north again, they would strike a veritable garden of beauty in the roads passing through the grounds of St. Stephen's College at Annandale. Tivoli would next be reached, when the Woods Road is next on the program.

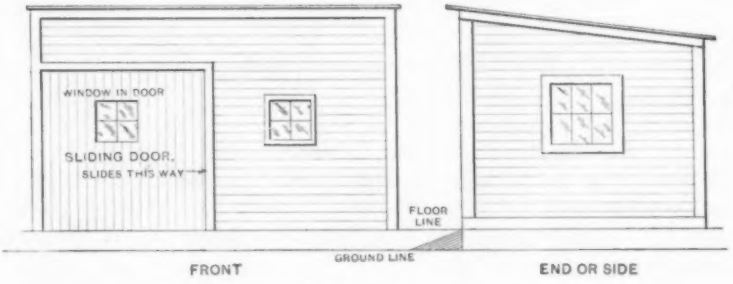
I refer to the roads of our county, as there may be automobilists in New York City desirous of knowing just where to go for a couple of days' delightful touring. You cannot do better than spend it up here in good old Dutchess.

JOEL SMITH.

POUGHKEEPSIE, N. Y.

A House for My Carriage

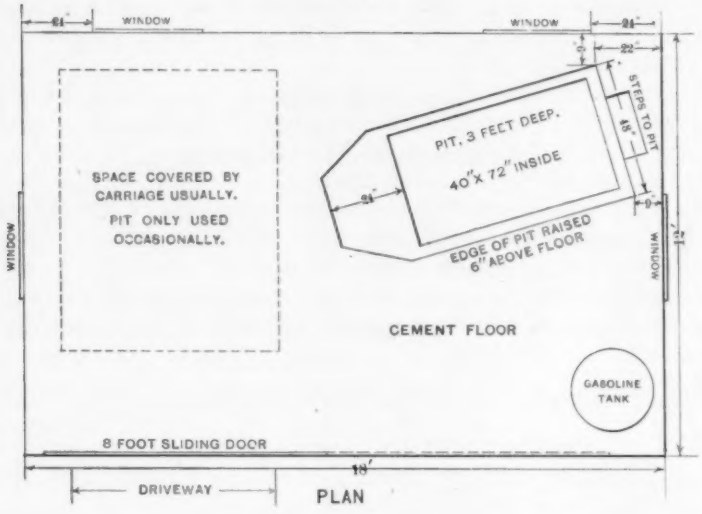
AS was said in a recent issue of this magazine, the question of housing an automobile is to be considered, as well as the buying of it. My space is limited, and a house 12x18 feet is about the limit, so I have drawn out the plans shown, and would like suggestions from those who have had more experience as to improving them.



The plan view shows the general idea, and it will be noted that the door is on the side, and slides to right. The window in door and in the house are to come together when door is open, so as to admit light in either position. The dotted lines show where the carriage is to stand generally, and I have allowed 6x9 feet, room enough for a large carriage, and also space to get around it to clean, oil or repair. The

floor I propose making of cement, and raised about a foot. This to give a floor that will stand water from washing—for I suppose the carriage must be washed—and oil from the motor or tanks without being soaked full.

The pit is on an angle in the corner, with steps down from the back end. It is 40x72 inches inside, has raised sides to prevent running the wheels in the pit, and pointed front end to aid in getting in position. The idea of the angle is that the carriage can be backed on from the door, and can be run straight out the door without doing the



obstacle race act. The gasoline tank is in the corner, as shown, and the sketches make the plan clear. As I haven't any use for an upper story I have drawn a slant roof, although the house might be more artistic with a gable roof.

If I had to economize space still more, I should put the pit under the carriage, in its main position, and have a sliding plank cover, which would be closed, normally, but could be rolled open at will. Having a separate pit, however, gives you the opportunity of housing your friend's machine, when he comes to spend the night, instead of hunting up a livery stable for him.

FRANK C. HUDSON.

NEW YORK, N. Y.

Westchester Automobile Club

THE first run of this club took place Saturday, December 1. A start was made from the Waldorf-Astoria at 10 A. M. for Gedney Hall, Mr. Howard Willet's country place at White Plains, N. Y., a run of about thirty miles. Upon arrival at Gedney Hall, Mr. Willets provided an excellent luncheon, after which a visit was made to his stables for the purpose of viewing his fine show horses, traps, etc. The return was made by way of Mamaroneck, through Larchmont, New Rochelle, Westchester, etc.

The day was a fine one, and fifteen carriages were in line. Among the members present were Col. J. J. Astor, Howard Willets, W. K. Vanderbilt, Jr., A. C. Bostwick, Percy Chubb, Paul G. Thebaud, O. Harriman, Jr., Harry C. Graef, Sidney Chubb, George Moore Smith, George Gould, E. H. Weatherly, Charles R. Flint, J. R. Walker, J. Scott McComb, Charles E. Warren, G. D. F. Leith, F. W. Geissenhainer, Jr., George F. Chamberlain, J. Dunbar Wright, B. B. McGregor, J. S. Whitehouse, W. H. Russell, George Glaenyer, A. W. S. Cochrane and Amzi L. Barber.

The whole affair was a decided success, and every one present enjoyed himself. If the first run is any indication of those which are to follow then we prophesy a very successful career for the Westchester Automobile Club.

A French official report from Buenos Ayres says:

"The use of electric and oil power motor cars is developing rapidly here. Not only heavy delivery wagons, but also luxurious carriages, driven by oil or electricity, are frequently to be met with. The roads are gradually being improved, and a 'touring club' has been formed with a view of watching over the interests of automobilism. One of the first resolutions of this club, the members of which comprise many merchants and influential amateurs, has been to establish throughout all the provinces of the republic, roads especially reserved for bicycles and light motor cars. These roads already radiate from Buenos Ayres for a distance of from sixty to ninety miles, and the work will be continued till a network of similar roads exists all over the country."

H. M. Brinckerhoff, Sec. A. J. Eddy, Pres. D. Cottrell, M. D., Treas.

About the Chicago Automobile Club

IT is with much pleasure that we present to our readers on page 44, illustrations of three representative Western automobilists. They are, respectively: Mr. Arthur J. Eddy, of the law firm of Eddy, Haley Gilbert & Munroe of Chicago, who is President of the Chicago Automobile Club; Mr. H. M. Brinckerhoff, and D. Cottrell, M. D., Secretary and Treasurer respectively.

Mr. Eddy is an automobilist of considerable experience, both in touring and racing. He is a warm advocate of the sport and is of decided value to all its interests.

Mr. Brinckerhoff is, in addition to being a devotee of the automobile, an experienced and capable engineer, being at the present time mechanical engineer and general manager of the Metropolitan West Side Elevated Railway, Chicago.

The Treasurer, Dr. Cottrell, is one who has tested the value of the automobile from the standpoint of a physician. The popularity of self-propelled vehicles with doctors is growing very much and one club recently formed, not a hundred miles from New York, has an unusual number of the medical profession among its members.

Other officers of the Chicago Club, and whose photos we were not not able to publish with this article, are: J. Ogden Armour, First Vice-President; Samuel Insull, Second Vice-President; F. C. Donald, Third Vice-President. The club was organized August 3, 1900, with forty charter members. Immediately after formation several short runs in and about the city were made, and on October 13 a run was made from Chicago to Milwaukee, returning the following day. The distance covered was about 100 miles by road, the best running time being 7 hours 5 minutes.

The club has held several meetings at which discussion of topics of interest to members have taken place. The members now have under consideration the question of holding an automobile exhibition under the auspices of the club early in June, 1901. The club is a vigorous one, and up to the present time has pursued an aggressive course. It is safe to assume that as a club it will wield a great influence upon automobiling in the West.

Automobiles in Parade at Bridgeport, Conn.

NOT the least important division of the Centennial Parade, held in Bridgeport, November 12, last, was that occupied by the automobile. In fact it proved one of the most attractive features of the whole affair. The Automobile Club of that city was in evidence. Every member of the club having his carriage in line. The Grand Marshal of the parade showed extremely good judgment in placing the Automobile Club of Bridgeport in the right of line, the club assisting very materially in clearing the streets for the rest of the paraders who were to follow. There were twenty-four carriages in line, headed by the Captain of the Automobile Club of Bridgeport, Mr. T. E. Griffin. Next came the Board of Governors, consisting of Mr. Jonathan Godfrey, Mr. Thomas P. Taylor, Mr. John C. Speirs and Mr. George W. Hills. The following members of the club were present: F. W. Bolande, Dr. C. L. Banks, F. C. Beach, J. N. Bulkeley, Louis Cassier, J. B. Cornwall, L. B. Curtis, H. M. Hills, Dr. C. C. Godfrey, W. F. Schweiger, C. Barnum Seeley, John C. Shelton, E. V. Sloan, A. N. Stanton, H. N. Sweet, Harry H. Taylor, A. K. L. Watson, H. M. Wells, F. A. Wilmot, Frank Miller, two trumpeters bringing up the rear. Each carriage was equipped with a club pennant bearing the club design.

Following the Automobile Club in the line of parade came the exhibit of the "Locomobile" Company of America, headed by Master Allen W. and Miss Hazel Speirs. This young man being but 15 years of age, is the youngest operator of an automobile in Connecticut, which he handled with remarkable ease. The "Locomobile" exhibit comprised stanhopes, buggy top carriages, victoria top carriages, "Locomobile" surreys. This company had twenty-six carriages in line.

The remainder of the parade consisted of the State militia, naval reserves, independent military companies of all the neighboring cities, fire companies in and around Bridgeport, exhibits by manufacturers and business men in the city, some of the firms sending floats that were decidedly beautiful.

The parade was pronounced by all a decided success, and was the greatest affair of its kind ever held in this part of the country.

The officers of the Automobile Club of Bridgeport are as follows: Jonathan Godfrey, President; Louis Cassier, Vice-President; Frank W. Bolande, Secretary, and Thomas E. Griffin, Treasurer.

Meeting of the Rhode Island Automobile Club

A SPECIAL meeting of this club was held November 21, when the following active members were elected:

Austin, E. A., Providence, R. I.; Carleton, F. B., Providence, R. I.; Holmes, C. E., Providence, R. I; Jackson, Daniel, Providence, R. I.; Knight, Prescott, Providence, R. I.; MacWhinnie, Dr. A. Morgan, Pawtucket, R. I.; Manton, Joseph P., Providence, R. I.; Sweet, Dr. Charles F., Pawtucket, R. I.; Shaw, Frederick B., Providence, R. I.

Messrs. A. H. Bliss, Edwin C. Bliss and Frank H. Bliss, all of North Attleboro, Mass., were elected to associate membership. The following governors and trustees were elected: Joseph E. Fletcher and William G. Titcomb to serve until 1901, William B. Weeden and Henry F. Lippitt to serve until 1902, R. Lincoln Lippitt and Lowell Emerson to serve until 1903.

The following committees were appointed by the Board of Governors:

Membership Committee.—Mr. Henry A. DuVillard, Chairman; Mr. William G. Titcomb, Mr. R. Lincoln Lippitt.

House Committee.—Dr. W. Edward Hibbard, Chairman; Mr. Jonathan Chase, Mr. John Shepard, Dr. J. A. Chase, Mr. Charles O. Read.

Committee on Runs, Contests and Tours.—Mr. R. Lincoln Lippitt, Chairman; Mr. Frederick E. Perkins, Mr. Harry G. Martin.

Committee on Laws and Ordinances.—Mr. John R. Bartlett, Chairman; Mr. Richard S. Howland, Mr. Daniel Case.

As a special committee to secure suitable quarters for the club, the following were elected: Dr. J. A. Chase, Chairman; Mr. R. Lincoln Lippitt, Mr. Frederick C. Fletcher.

NOT DECIDED

"I had a mind to buy an electric."

"You changed your mind?"

"Yes; I have now half a mind to buy a steamer and half a mind to buy a gasoliner."

The Voiturette Did It

Fast he held her hand in his'n,
In a sort of love-locked prison,
While he told the burning story of the love that rent his breast;
And the maiden sat and listened,
While her eyes with triumph glistened,
As his all-consuming passion he in trembling tones confessed.
But she tenderly repulsed him;
How her words with pain convulsed him!
But he'd often heard that fainting heart ne'er won fair lady yet,
And, with eyes upon that beacon,
Hoping that she yet might weaken,
Every point of her objection he with valiant vigor met.

Yet the maid was unrelenting—
Gave no token of repenting,
Though the burning words he uttered seemed to almost singe her ears!
To his every plea emphatic
She would shake her curl-topped attic,
And his feelings overcame him till he almost burst in tears!
Then a thrill of hope ran through him
As a happy thought came to him,
And the feelings of joy within him burst forth in epithet.
As she fell upon his bosom,
Hugged him as in fear she'd lose him—
He had promised that his bridal gift would be a brand new voiturette.

—(*Ex.*)

Committees of the Automobile Club of America

THE standing committees for the year 1901 are as follows: Contests and Technical—C. J. Field, chairman, with power to appoint four associates. Laws and Ordinances—George F. Chamberlin, chairman; James C. Church. One to be appointed by Mr. Chamberlin. Runs and Tours—Albert C. Bostwick, chairman; Dr. J. Grant Lyman, J. C. McCoy, George Isham Scott, Harrison K. Bird, W. E. Scarritt, J. Dunbar Wright. House Committee—Charles P. Doelger, chairman; Malcolm W. Ford, S. T. Davis, Jr., J. M. Hill, Samuel H. Valentine. Library Committee—A. R. Shattuck, chairman; E. E. Schwarzkopf, Frederick W. Tousey. Membership Com-

mittee—Gen. George Moore Smith, chairman; Sydney Dillon Ripley, J. M. Ceballos, V. Everit Macy. Auditing Committee—George W. Young, chairman; J. Talbot Taylor, Warner M. Van Norden. Albany Post Road Committee—J. M. Hill, chairman; Col. John Jacob Astor, Amzi L. Barber, Alexander Fabbri, Ernest G. Fabbri, S. T. Davis, Jr. Good Roads Committee—A. R. Shattuck, chairman; Hon. George R. Bidwell. Foreign Relations Committee—Clarence G. Dinsmore, chairman; David Wolfe Bishop, J. Dunbar Wright.

Stabling Automobiles Around Harvard

BY O. L. STEVENS

EVERYTHING that could serve as a means of conveyance for Harvard students and the people who go to see them has always made Harvard Square a center, and now the automobile is taking its turn at it. Hardly more than two years ago there was no building specially devoted to "autos" anywhere about the square, and to see even a Locomobile in Cambridge streets was a matter of interest; but now, within a stone's throw of the college yard, there are two well-equipped Automobile Stations, a livery stable which numbers one or two Locomobiles among its regular "boarders," and a tidy little club stable managed by Harvard students.

This club stable antedates all the others, and it owes its existence to the fact that when the college men first began to get the automobile craze it was rather hard to find any suitable place in which to store motor vehicles near the college, and at the same time to have them properly cared for. A year ago this fall one or two of the students found a chance to use the present small building on Remington Street. Others joined them later, and after the first few weeks, in which each man bought his own supplies and paid for his repairing independently of the others, the present club plan was adopted, the expenses for rent, caretaking and supplies being figured in a lump sum, of which each man bears his proportionate share. The members have named themselves, half as a joke, the Harvard Automobile Club, though they have never been very particular to have any organization.

Their stable was intended originally to house the horse and carriage of the physician who owns it. But it lent itself easily to the purposes of the automobilists. Its main door opened into a room about

eighteen feet square, which had served at once as carriage house and wash room, for it had a concrete floor sloping toward a drain in the center. A passageway six feet wide led from this room to the horse stalls in the rear, and also to a small room where the harnesses were kept; while at the right of the passage, entered by a small door from the front room, was a small store room. There was a good loft up stairs, and a carriage elevator could be lowered just inside the main door of the stable.

Photo by W. H. Tupper, Cambridge

Exterior of Harvard Automobile Club Storage Station

When the Harvard men took possession, all they did at first was to set in a row of lockers against the side wall at the right of the main door; put a bench, vise and a kit of repair tools in the small rooms at the right of the passageway; and hire a caretaker. There was room enough for a row of four carriages on the concrete in front of the lockers, and others could be kept—rather inconveniently, to be sure—in the space in front of the horse stalls or in the passageway; while the stalls themselves gave plenty of room for supplies, a hose attached to a

faucet rising at the edge of the concrete made it easy to fill a water tank anywhere in the building, and the concrete itself made the best kind of a floor on which to stand a carriage while it was being repaired or overhauled. Several of the members have always done most of their overhauling for themselves, and they were not slow to find that an ingenious use of the elevator would save a deal of backache. They merely lowered the elevator until the forward wheels of the "sick" carriage could be run upon it, then raised it about four feet and fastened it, thus holding the carriage tilted up so that the repairer could get at all its mechanism by sitting comfortably in front of it, instead of

Photo. by W. H. Tupper, Cambridge

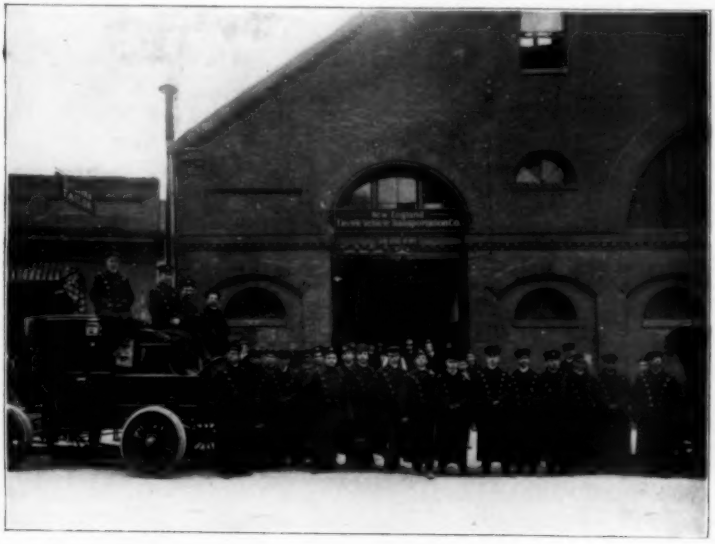
Interior of Harvard Automobile Club Storage Station

lying flat on his back underneath it, as he would have had to do with the carriage on the floor. When the members returned to college after last summer's vacation they made several changes in their stable. They had the partitions in the old stalls pulled out, gaining room for four or five more Locomobiles where the stalls were, and by building an incline to overcome the six or eight inches difference between the level of the stalls and the floor of the old harness room they made the latter room available for four more Locomobiles. They also set up a miniature machine shop in a corner of the loft, and gave over the small room down stairs, where the tools had been kept, to the uses of an office, so far as the stable could be said to have any.

Probably the Harvard automobilists get more real fun out of their machines than any other set of enthusiasts around Boston. They go speeding about in them at all hours of the day or night, rain or shine, to the delight of their friends and the distraction of their caretakers. A frequent sight on the asphalt and vitrified brick of Harvard Square is a Winton or a Locomobile with three or four students piled upon its single seat. And only a month or two ago one member nearly smashed himself and carriage into unrecognizable fragments by collision with a tree while racing in the dark on a crooked road. There have been many races in daylight since the club was started, however,—not all of them prearranged, but many of them none the less interesting on that account. When the club first started, some of the members took their time from point to point every time they went out, and the rivalry as to whose carriage was the swiftest was lively. Gradually it became apparent that the swiftest machines were those owned respectively by Mr. Warwick Greene, a New Yorker, and the son of General Francis V. Greene, and Mr. Charles Boyden of Boston. Mr. Greene had one of the first twenty-five Locomobiles made at the Newton factory, and Mr. Boyden's was the same type of carriage of a more recent build. They had several impromptu speed trials without reaching any satisfactory conclusion as to which carriage was the best, and at length it was arranged that a grand trial should take place on a five-mile stretch of the Newton Boulevard, the machine which covered the ten miles out and return in the best time to be declared the victor. The Stanley Brothers of Newton were interested in the race, and the local agents for the De Dion and Orient tricycles heard of it and secured the permission of the participants to try conclusions at the same time with tricycles. The only difficulty was the police regulation against speeding on the public roads, and it was supposed that this could be overcome by holding the race previous to 6 o'clock in the morning. The morning of June 16 of the present year was chosen, and at the appointed time, before the staid Newtonians were astir, automobilists from all around the city gathered near the Chestnut Hill Reservoir, and the two Harvard men in their Locomobiles, Mr. C. H. Metz and Albert Champion, on Orient tricycles, and John Robbins on a De Dion, were started in due form by Mr. F. E. Stanley, with Dr. G. B. Henshaw of Cambridge holding the watch. It was a beautiful start, but it came to nothing, so far as deciding the question at issue was concerned. About a mile down the boulevard, just around a sharp turn, a squad of Newton policemen had lined up across the roadway with drawn clubs.

They flagged the race. Mr. Metz got by them, for he was in the lead, but Messrs. Boyden and Champion were caught in the meshes of the law and had to stand a wait of two hours at the police station before the Court allowed them their liberty through the payment of a fine. There have been no more attempts at arranging road races since, though the racing spirit in the club is dormant rather than extinct.

The membership in the club for the opening season, besides the two men mentioned above, included Mr. William M. Crane of New York, who had the first Winton carriage in the club; Mr. Arthur



Cambridge Station of Electric Vehicle Company

Iselin, son of the well-known New York yachtsman and owner of another Winton; Mr. Walter A. Boal, who won one of the races at last summer's Chicago *Inter-Ocean* meet in his Locomobile. He made part of his trip from Cambridge to Chicago last summer over the road in his carriage. Mr. John T. Pratt, of Brooklyn, and Mr. F. T. Lutz, of Boston, also had Locomobiles.

Most of the Harvard men outside the club who have automobiles keep them at the Automobile Station on Palmer Street, just in the rear of what is known as Harvard Row, forming one side of the

square. It was opened just before Class Day last summer. An enterprising bicycle dealer, Mr. W. E. Furniss, thought he saw a chance to do a good business in storing and caring for the steam and gasoline carriages which could not gain admittance to the Harvard club stable or to the only other automobile station in the city, that of the New England Electric Vehicle Transportation Company, which at that time took in no carriages except its own cabs and leased vehicles. Mr. Furniss got control of the two-story brick building on Palmer Street, which had formerly been used as a carriage and blacksmith shop, reconstructed the entrance so that carriages could be run in easily from the street, fitted up an office in one corner, built in a wash-floor opposite the door, and hung out a sign. He got in two Locomobiles almost immediately, and before the end of the summer had several others. A room at the rear was also taken, and this will be fitted up as a repair shop if business warrants it in the spring. The floor of the main stable is about 25 x 70 feet. Only the ground floor is used, though there is room for extension on the second floor when it is needed. Skilled workmen are on hand all the time to care for carriages ; vehicles of patrons are called for and delivered, and though the station does not make a pretentious appearance, it offers exactly the same advantages for automobile owners that a first-class livery stable offers to the owners of horses.

Loading Table of the Electric Vehicle Station

The station of the New England Electric Vehicle Transportation Company has only within a short time been ready to undertake the general business of storing and caring for all kinds of automobiles. It

was started as a recharging station for the public carriages which began to make frequent runs out from Boston as soon as public automobiles made their appearance on Boston streets. This use has steadily increased, and on such days as Class Day, or on afternoons when big games are in progress on Soldiers' Field, practically every vehicle the company can muster is called on for one or more Cambridge trips. More recently the station has had a large number of electric delivery wagons to recharge, as its business for mercantile houses has developed.

The station is in one section of the old brick car-houses of the Cambridge Railway, abandoned as a street railway center ever since trolleys displaced horses. On the main floor the office is at the right of the entrance ; behind it is the engine and dynamo of the type common to all the company's sub-stations ; while against the rear wall is the apparatus for drawing the heavy batteries out of the carriages and replacing them with fresh cells. Racks for holding batteries while being recharged extend along the entire length of the wall at the left of the entrance, and in front of them is a pit to allow a repairer to get at the mechanism beneath a carriage. The station has had a man on duty all the time for its electric business alone, and there will probably be an increase in the force as the new storage department develops. The development of the station to meet this new business will be the simplest thing in the world, for the room is limited only by the outer walls of what was the old stable for street cars, and which enclose several times the space now occupied by the Vehicle Company.

It is worth while to mention that the livery stable which takes in automobiles drew the line at gasoline carriages. The proprietors said that horses could get along very well with a self-propeller that made no more noise than a steam carriage, but that they couldn't stand a thing that whirred, and puffed and rattled while it was supposed to be merely waiting to start.

Committee of the National Good Roads Association

AT the recent gathering of good roads enthusiasts, held in Chicago, there was proposed and perfected a permanent organization of the National Good Roads Association. This matter of urging the betterment of our roads ought to receive the hearty support of farmers throughout the country instead of opposition on their part, as is too often the case. Perhaps in the future farmers generally will look back with gratitude upon the labors of these champions of good roads. It is a singular thing that our country, which stands for the best in so many things, should tolerate such a poor system of roads, and it is hoped that the conference just held gave a telling impetus to the great number of those fighting for a better condition of things.

The headquarters of the organization will be in Chicago. The officers elected were: President, William H. Moore, Missouri; secretary, R. W. Richardson, Nebraska; treasurer, Edwin A. Potter, Illinois; vice-presidents, California, John Baruch; Colorado, William Wadley; Washington, J. A. James; Idaho, W. E. Pierce; Wyoming, A. L. Fallows; Montana, Samuel Fortier; Minnesota, S. W. Cooley; Wisconsin, G. W. Pratt; Michigan, A. E. Palmer; Kansas, William Bradbury; Iowa, G. H. Van Hooten; Illinois, G. M. Greenbaum; Ohio, J. W. Stewart; Utah, F. J. Richardson; South Carolina, E. S. Tessier, Jr.; New York, William B. Clark; North Carolina, J. A. Holmes; Kentucky, I. B. Noll; New Jersey, General E. G. Harrison; honorary, Andrew Pattullo, M. P., and A. W. Campbell of Canada.

An address was made by W. H. Moore, in which he gave a description of the work of the Interstate Good Roads Association, of which he is also president.

During one of the sessions Howard H. Gross, expert on good roads for Illinois, presented a paper on legislation. He said that the first proposition to be considered was the education of the public to a full realization of what good roads meant. He declared that every dollar spent for hard roads enhanced the value of the land fully $5. A 1 mill tax on the real estate in Illinois, Mr. Cross said, would raise $1,000,000 a year for the construction of hard roads. He figured that this would not mean over a tax of one-half a cent on a bushel of corn, while the producer would be able to get from 4 to 5 cents more per bushel if enabled to get his corn to the market at any season of the year.

Run of the Automobile Club to Bridgeport, Conn.

WHETHER it was pressure of business or the coldness of the weather which prevented a larger turnout on this occasion it is hard to say. However, when the time came to start there were comparatively few ready to take the ride. Even some of those who had thought of taking it in were inclined to change their mind.

Mr. A. C. Bostwick led the way at 10 A. M., in his 24-horse power Panhard, accompanied by his machinist. Others who participated in the run were: D. Wolfe Bishop with his chauffeur; Dr. Grant Lyman and chauffeur, with Messrs. H. H. Pease and W. H. Hall as guests; Winslow E. Buzby and R. H. Jones in a Locomobile; Frank Craven in a De Dion Motorette, with R. E. Jarrige as guest; Mr. G. B. Adams ran a 9-horse power Packard, having A. R. Hawley as guest; J. Dunbar Wright operated his Winton, accompanied by his machinist; Mr. W. S. Ions ran another 9-horse power two-seated Packard, having as guests Messrs. F. W. Tousey, Fred H. Colvin and Jas. J. Salmond.

All those who started were well wrapped up and in a condition to stand the long run. As the gay party sped along they were satisfied that it was a genuine "winter run." Skaters were seen at intervals and the whole surroundings suggested winter.

After leaving the confines of New York city, the route lay through the following places: Fordham, Bartow, New Rochelle, Larchmont, Mamaroneck, Rye, Port Chester, Greenwich, Cos Cob, Stamford, Darien, Rowayton and Norwalk. At the latter place it was expected that the Automobile Club of Bridgeport would meet the visitors, but as the latter had reached that point sooner than the Bridgeport club had expected it was deemed inadvisable and consequently those that started from New York rode into Bridgeport alone.

When Bridgeport was reached, headquarters were made at the Arcade Hotel, on State Street, and vehicles were stored at several nearby livery stables.

In the evening the Bridgeport automobilists entertained the visitors at dinner, after which two boxes in the Park City Theater were placed at their disposal to witness Grace George and her company in "Her Majesty."

Sunday morning when the automobilists awoke it was snowing, and considerable had already fallen during the night, giving a decidedly wintry appearance.

The various machines left Bridgeport at different hours. Those

who took part in the run enjoyed it very much in spite of the cold weather. The hospitality of the Bridgeport Club was overwelming. It did all in its power to make all feel at home, and needless to say, succeeded. Great credit is due to the members for the manner in which they catered to the wants of their visitors, not only in the way of entertainment, but in the matter of furnishing gasoline, storage, and in other ways.

The Liquid Air Automobile

WE feel that such a decided innovation as the liquid air automobile will be much discussed, and that our readers who have not looked into the machine will expect an opinion on it. Without doubt one of the chief novelties at the Grand Central Palace show was the Tripler liquid air exhibit. The machine was a Locomobile, with the boiler and water tanks replaced by liquid air tanks, and it ran very smoothly, when in operation, as was to be expected.

But in spite of this, and considering all the claims made by the exhibitors to be true, we fear the future of the machine is so very much in the future as to prevent its being feasible for years to come.

Liquid air is a method of transmitting and storing power the same as electricity, and is, of course, simply air compressed to the point of liquefaction. It presents some of the most remarkable phenomena known to science, and interests every one who appreciates the wonderful in any form. But as a mechanical proposition for running automobiles it has several serious drawbacks.

It cannot be stored in closed vessels, as it develops a tremendous pressure, which would burst any tank that it is practical to build. So a vent must be left which acts as a safety valve on a boiler, and relieves all pressure above the desired limit, say 200 pounds. This means that the air is constantly escaping when not being used, and if a machine stands in the carriage house, the motive power disappears, leaving it helpless.

As it cannot be stored in a tank in the house, there is nothing to do but go to the liquid air plant with a jug, or hire a mule to tow the machine there to be filled, unless you invest in a compressing plant of your own. Even with a liquid air plant in every town this is not especially convenient, and at present it is practically prohibitive.

This is another case where the actual cost of operation of the machine is not a feature, but the inconvenience of recharging puts it out of the list of possibilities, for the present, at least.

Anniversary Run of the Automobile Club of Great Britain

THE London to Southsea run was an unqualified success, and will rank as the principal item of an eventful year to automobilists. When one recalls the utter failure of the Brighton run some three years ago, the rapid advance of the autocar since then is simply marvellous. The distance from London to Southsea is about 74 miles. Much of the road is hilly, especially between the towns of Guilford and Milford. The ride was certainly calculated to test the qualities of the machines which took part in the run.

The procession started from Whitehall at 9:30 o'clock on the Saturday morning, and fortunately for all concerned the weather was fine and fairly clear, considering the time of year. Every class of motor was represented, and although the petrol driven car predominated there were representatives of steam and electricity. The long line extended from the Horse Guards to away on the Embankment, and the crowd of sightseers enjoyed a novel view. It was really 10 o'clock before a move was made, and then things progressed very briskly. The club regulations as to pace were strictly adhered to and there was nothing to complain of on that score. Mr. C. Johnson, the Secretary of the club, led the way on Mr. Alfred Harmsworth's Panhard No. 24, and he was followed by over 100 cars, each bearing an official number.

There were one or two stoppages between the starting point and Thames Dilton, but the unfortunate motorists put on a good face and were able to "follow on" as Miss Edna May used to sing. Mr. Mayhew, of the London County Council, on his 16 horse-power Napier made the pace a little warmer and the gaps between the various cars increased. Lord Russell was mounted on an American car with an accompaniment which sounded very much like sleigh bells, while Mr. Henry Edmunds had a brave show of flowers in the shape of chrysanthemums as a decoration to his chariot. At Esher and Guilford there were additional arrivals and the procession was quite a triumphal one. Guilford was reached before 12 o'clock by the leaders, and they pursued their way to Godalmung, while their less fortunate comrades were still straggling into the former town. Lunch was taken here and many humorous notes passed between the tourists as they enjoyed a splendidly served meal. The Hon. C. S. Rolls, who, up to this point, had

made the journey on a motor tricycle, abandoned his charge and joined his club companion, Mr. Hargreaves, in his motor car. Mr. W. J. Peall, the famous billiard player, was noticeable here, and looked like making a good "break"—into Portsmouth.

I am afraid I should trespass too much on your space if I recounted the journey in detail. Suffice it to say that Portsmouth was reached in good time, where a large crowd turned out to watch the arrivals. The Mayor (Alderman Emmanuel) was invited to take a seat in No. 78, the cleanest car in the opinion of the experts, and he succumbed to Mr. Edmunds' blandishments and joined the procession. Illustration of this vehicle will be found as a frontispiece. In the evening dinner was held at the Esplanade Hotel, Southsea, presided over by Hon. J. Scott Montagu, M. P., supported by the Committee of the Automobile Club, and nearly every participant in the tour. The Mayor in replying to the toast of "the Mayor and Reception Committee," expressed his pleasure in welcoming the automobilists to Portsmouth, and incidentally mentioned that if they would similarly honor the town in the summer he would give a 10 guinea cup and a second prize of 5 guineas for whatever the club should decide.

The chairman, during the course of his speech, reminded the gathering that he himself had started Mr. Arthur Balfour, the leader of the House of Commons, on his career as an automobilist. Mr. Balfour was now the proud possessor of three cars, and his enthusiasm for automobilism was a good omen for the success of the cause. Peers and Members of Parliament were taking more and more to the sport, and even allowing for the prejudices of some individuals, there was nothing to complain of in the progress already made. At the conclusion of the proceedings much amusement was created by the reading of an anonymous telegram, which ran "May your oil cans blow you to Patagonia!"

The bulk of the party returned to London on the Sunday, but a few stayed overnight and made the return journey on the Monday. The conditions were much changed. The hard, dry roads were a thing of the past, and rain fell in torrents from early morn until, with the exception of a few intervals of fair weather, far into the night. Considering the treacherous condition of the street car lines and paving blocks of Portsmouth, the steering was excellent, and good progress was made. Although the weather was very disagreeable everybody took it in good part, and the many ladies who formed the party deserved the highest praise for their pluck.

In town, another dinner was held at the Whitehall Rooms, on the anniversary of the date when the Light Locomotives Act of 1896 came into force. Roger Wallace, Q. C., was in the chair, and the company, which was a distinguished one, included the Right Hon. C. B. Stuart-Wortley, Q. C., U. P., Sir R. Harrison (Inspector General of Fortifications), Lord Benthwick, Hon. J. S. Montagu, M. P., Professor Boverton Redwood, Baron de Broyne, Col. R. E. Ovington, Mark Mayhew, S. F. Edge, etc., etc. The toast of the evening, "Success to the Automobile Club," was given by the Rt. Hon. C. B. Stuart Wortley, M. P., and during the course of his speech that gentleman gave some excellent advice to users of motor cars in general, and showed by the tenor of his remarks that he was a keen observer of automobilism. Altogether the assembly was a great success, and shows what a hold on the metropolis the pursuit of automobilism has taken.

L. J. O.

LONDON, December 1, 1900.

KINDRED SPIRITS

She—And did you light the fire with kerosene, too?

He—No; I smoked while I was putting gasoline in the automobile.—*Chicago News.*

"Dat's a queer hoss-shoe over your door, Mr. Johnsing."

"Hoss-shoes is out of style; dat's a automobile tire."

LA COURSE DES GRANDS MASQUES

Prize Automobile Poem from the *Auto-Vèlo*

Translated by A. Lenalié.

THE START—*Le Dèpart.*

The starter's watch proclaims the crucial time at hand:
Attention! Both! Together! Go! At the command
The masked expert, with iron grip on steering gear,
Leaps forth, superb and supple like an unleashed deer,
With labored breathings, that applause, and eager shout
Of masses, gathered from the byways round about,—
Combine to render unobserved. On, swiftly, flies
The chaufeur towards the goal where promised glory lies!

ALONG THE ROAD—*Sur La Route.*

The highway, dreamily wending on
afar
Is straight and white. Sunbeams the dawn
unbar.
A dawn so sharp—so raw and misty—
must prick
Our chauffeur's muzzled nose. Sapristi!
He's chic!
The motor roars. By mode erratic,
upheld
We seem, as though by force pneumatic
propelled.
The motor roars. By ways unknown
we flee.
The fray once on, chiselled from stone
are we.
The motor roars! Attention! whiles
we run
The steep descent. Temptation's wiles
we shun.
What! faster yet? 'Tis madness wakes!
Who cares!
To win the race, hair-breadth escapes
one dares.
The chauffeur plunges downward; reappears
to gain
The slope; fain would Olympic spheres
attain!

Sinuous our course, at times, and fraught,
at least,
With incident. Between the wheels is caught
some beast.
Just now, upon the ragged edge
we pause;
An aged frump—as we allege—
the cause.
Capsized are pigs and fowl galore—
some slain.
Eh! Chick! Too bad! Your fault. Once more
we gain. . . . .

THE CONTEST—*La Lutte.*

Hark! from the rear a clarion call resounding.
Now, by the Gods! 'tis our opponent, rounding
Up apace! We've scarcely half a minute's start!
Wrapped in a cloud he comes; like arrow's dart
He covers space! Relentlessly he overtakes—
"But no!—He'll not so easily win the stakes!"
Sings out th' assistant, watchful, as we glide, alert.
"More speed, patron! The motor sleeps. She seems inert.
We scarcely travel at the rate specific!"
He nods assent; the pace becomes terrific.
How thrilling these coeval contests of our day!
Arena-wise, yet in unmediæval way,
The wheel firmly clenching with grasp vitalized
Whizzing swift o'er a land sadly demoralized! . . . .

THE ONLOOKERS BY THE WAYSIDE—*Ceux Qui Attendent Le Passage.*

"The leader is not far away!—Across the route
Let no one pass!" They come! The warning blast—Look out!
"Now both are here! The signal sounds to clear the way!
'Tis Girardot! No Charron! Or is't Levegh?"
But then—how recognize a flying cannon ball?
And what import are names when glory levels all?
Applause the racers greet.—They're sporty, these suburbans!
Our peaceful peasants, roused by this disturbance,
Cease from their labors, and, standing, hand on haunch,
Dumbfounded, watch the passing of this avalanche! . . . .

THE FINISH—*L' Arrivée.*

Upon their autos, that have answered all commands,
These champions have traversed unto many lands;
Grown hearty on the dust they swallowed in these sallies,
They've climbed mountain sides and plunged into valleys;
Have travelled through cities, and dark forests' shade.

Have skirted the coast, the torrent o'er-leaped—unstayed!
And if wearied their loins, yet the spirit takes birth
In these difficult lessons derived from the earth.
Meantime, we must finish this fabulous run:
(It cannot forever endure—and soon must be won!)
There, just beyond! A large, white streamer marks the goal.
Afar off may be read the magic word: "*Controle.*"
'Twixt two tall flag-staffs may be readily discerned,
Controle! most hoped for goal, repose well earned!
With one final effort, this chauffeur expert,
For a finish sensational braces alert.
With solemn mien, a man, within the road midway,
Signals with bright-hued handkerchief;—this is to say:
"Stop! Your number?" Grinds the brake. They write—O bliss!
His signature upon a blank . . . .
Apotheosis!

M. GAETAN DE MEAULNE.

The Automobile Club of Brooklyn moved into their new quarters at the Hotel Clarendon, December 10, when they held their first annual election. The following officers and board of governors were unanimously elected: President, Edward J. Bergen; First Vice-President, R. Holcomb Jones; Second Vice-President, Dr. W. M. Hutchinson; Secretary, C. Benton Dix; Treasurer, C. H. Tangeman; Consulting Counsel, Joseph J. Robinson; Board of Governors, Edward J. Bergen, R. Holcomb Jones, Benj. F. Tyler, Dr. Clinton B. Parker, Frank D. Maltby, C. H. Tangeman, Dr. Wm. M. Hutchinson, Edgar W. Mersereau, C. Benton Dix.

After the election, champagne, etc. The rooms were handsomely decorated with roses, etc.

The new Board of Governors met December 12, and appointed the following committees: Membership Committee, Dr. Dewitt L. Parker, Dr. J. O. Polak, Joseph Gardom; House Committee, Dr. Clinton B. Parker, Chairman, John F. Oltrogge, D. Irving Mead, J. I. Bergen, Willis M. Follmer; Tours, Runs and Exhibitions, Frank D. Maltby, Chairman, C. H. Tangeman, DeWitt L. Parker, Theodore Heilbron, Edward J. Bradbury, Eugene La Grove, Henry Hyatt; Laws and Ordinances, James C. Church, Edgar J. Bergen, Joseph J. Robinson; Auditing Committee, Clarence S. Smith, Edward C. Boyce, Edward H. Bancker.

Automobile Club Directory

Under this heading we shall keep a record of the motor vehicle clubs both of this and other countries, and we hope to have the co-operation of club officers in making it accurate and complete.

*Corresponding clubs of the Automobile Club of America are designated thus *.*

Automobile Club of America, Malcolm W. Ford, Secretary, 203 Broadway, New York ; representative on International Racing Board, Clarence Grey Dinsmore ; Substitute, John H. Flagler.

Automobile Club of New Jersey, President, Kirk Brown ; Vice-President, W. J. Stewart ; Treasurer, H.W. Whipple ; Secretary, Dr. H. Power.

Automobile Club of Baltimore, W. W. Donaldson, Secretary, 872 Park Avenue, Baltimore.

Automobile Club of Brooklyn, Secretary, C. Benton Dix, Hotel Clarendon, Brooklyn.

*Automobile Club of Columbus, O., C. M. Chittenden, Secretary, Broad Street.

Chicago Automobile Club, Secretary, H. M. Brinkerhoff, Monadnock Block, Chicago.

Long Island Automobile Club, Secretary, Charles W. Spurr, Jr., 552 State Street, Brooklyn.

Automobile Club of New England, Secretary, Geo. E. McQuesten, Brookline, Mass.

*Cleveland Automobile Club, L. H. Rogers, 357 Amesbury Avenue, Secretary, Cleveland, O.

*North Jersey Automobile Club, E. T. Bell. Jr., Secretary, Paterson, N. J.

*Automobile Club of Rochester, Frederick Sager, Secretary, 66 East Avenue, Rochester, N. Y.

Massachusetts Automobile Club, President, J. Ransome Bridge ; Treasurer, Conrad J. Rueter ; Secretary, L. E. Knott, 16 Ashburton Place, Boston, Mass.

Pennsylvania Automobile Club, Secretary, Henry J. Johnson, 138 No. Broad Street, Philadelphia.

*Philadelphia Automobile Club, Frank C. Lewin, Secretary, 250 No. Broad Street, Philadelphia, Pa.

Rhode Island Automobile Club, Secretary, Frederick C. Fletcher, P. O. Box 1314, Providence, R. I.

San Francisco Automobile Club, B. L. Ryder, Secretary, San Francisco, Cal.

Columbia College Automobile Club, Lewis Iselin, Secretary, Columbia College, New York, N. Y.

*Buffalo Automobile Club, Secretary, Ellicott Evans, The Lenox, Buffalo, N. Y.

Worcester Automobile Club, Worcester, Mass., President, J. E. Farwell ; Vice-President, J. W. Bigelow ; Marshal, W. J. H. Nourse ; Secretary-Treasurer, H. T. McKnight.

AUSTRIA.

Budapest—Magyar Automobil Club, 31 Musem Korül.

Innesbruck—Tiroles Automobil Club, Rudolph-Strasse 3.

Prague—Prager Automobil Club.

BELGIUM.

Antwerp—Automobile Club Anversoir, 34 r. Longue de l'Hopital ; President, Baron de Bieberstein.

*Brussels—Automobile Club de Belgique, 14 Pl. Royale ; Moto-Club de Belgique, 152 Boul. du Nord ; Touring Club de Belgique, 11 r. des Vauniers.

Charleroi—Automobile Club de Charleroi, Hotel de Esperance.

Ghent—Automobile Club de Flandres.

Liege—Automobile Club, Liegeois, 2 r. Hamal.

FRANCE.

Amiens—Automobile Club de Picardie, 36 r. de La Hotoie.

Avignon — Automobile Club de Avignon.

Bordeaux—L'Automobile Bordelais.

Dijon—Automobile Club, Bourguignors Cafe Americanie.

Lyon—Bicycle et Automobile Club de Lyon; Motor Club de Lyon, 3 pl. de la Bouise.

Marseilles—Automobile Club de Marseilles, 61 r. St. Fereol.

Nance—Automobile Club, Lorrain, Thiers pl.

Nice—Automobile Velo, Club de Nice, 16 r. Chauvain.

*Paris—Automobile Club of France, 6 pl. de la Concorde; Motr-Club de France; Touring Club de France, 5 r. Coq-Héron.

Pau—Automobile Club, Bearnais Ave. de la Pau, President, M. W. K. Thorn.

Périgueux—Veloce Club, Perigourdin, Hôtel de Commerce.

Toulouse—Automobile Club, Toulousain Café Riche, pl. St. Etienne Société des Chaffeurs du Midi, 25 r. Roquelaine. President, M. Gay.

GERMANY.

Aachen (Aix la Chapelle)—Westdeutscher Automobile Club, Hotel Grand Monarque.

Berlin — Mitteleuropaischer Motor Wagen Verein, I. Universitatstrasse, Herr A. Klose; Deutscher Automobil Club, Liusenstrasse, 43-44.

*Deutscher Automobil Club, Liusenstrasse, 43-44. President, S. D. Herzog, Victor von Ratilin.

Dresden—Radfahrer-und Automobilisten Vereinigung: Dresdener Touren Club.

Eisenach—Mitteldeutscher Automobil Club; Motorfahrer Club, Eisenach.

Frankfort am Main — Frankfurter Automobil Club, Restaurant Kaiserhof.

Munich—Bayer. Automobil Club, 33 Findling Strasse.

Stettin—Erster Stettiner Bicycle und Automobil Club.

Strassburg—Strassburger Automobil Club.

Stuttgart—Suddeutscher Automobil Club; Wurtembergischer Motor Wagen Verein.

GREAT BRITAIN.

Birmingham — Motor and Cycle Trades Club, Corporation street.

Edinburgh — Scottish Automobile Club.

Liverpool—Liverpool Self-propelled Traffic Association, Colquitt street. Secretary, E. Shrapnell Smith.

*London—Automobile Club of Great Britain and Ireland, 4 Whitehall Court, S. W. Hon. Secretary, C. Harrington Moore.

Nottingham Automobile Club, Secretary, A. R. Atkey, Nottingham, England.

HOLLAND.

Nimegue—Nederlandsche Automobile Club.

ITALY.

Milan—Club Automobilisti Italiani 6 via Guilini.

*Turin — Automobile Club d'Italie Via Vittorio Amedeo II, 26.

RUSSIA.

Moscow — Moskauer Automobile Club, Petrowka, Hauschnow.

St. Petersburg — Automobile Club de Russe, President, M. Delorme.

SPAIN.

Madrid—Automobile Club de Madrid.

SWITZERLAND.

*Geneva — Automobile Club de Suisse, 9 boul. de Theatre.

THE AUTOMOBILE MAGAZINE

A Live Journal for all interested in Motor Vehicles

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The Index

WITH this number we are sending out a complete index to the AUTOMOBILE MAGAZINE, beginning with the issue of October, 1899, up to and including December, 1900. Those desirous of obtaining a copy for reference may do so free of charge by addressing this office.

The Other Side

A GREAT many automobilists were probably surprised a few weeks ago when they read the remarks credited to Mr. A. C. Bostwick, for use in the "Book of Sport." While the article contains a number of very decided opinions, some of which might discourage those about to enter the ranks of automobilists, they undoubtedly embody many valuable suggestions. They also serve to warn us against the weak points and annoyances which he has encountered and serve to prevent one being too sanguine as to the cost of maintenance.

On the other hand the average man would probably not subject his carriage to such severe service as Mr. Bostwick does and would

probably get along with fewer repairs on this account. Nevertheless, the warning to those who imagine the first cost is the only one is not out of place, especially in cities where the cost of storage is such an important factor.

Most of the adverse criticism of Mr. Bostwick, however, comes from a desire to gloss over the defects of machines under the impression that such statements hurt the industry. On the contrary, we believe it will prove an ultimate benefit by preventing disappointed buyers, who do more to discourage the use of carriages than anything else.

Mr. Bostwick has done, is doing and will probably continue to do as much or more for the development of the industry than any other one man, and if machines are built so that the points he makes are no longer true, he will have done still more for its ultimate success.

While we wish it were true that all machines ran without these difficulties and hope the time will come when they will do so, we know of no one better qualified to write from actual experience than Mr. Bostwick.

The Month's Leading Article

WE wish to call the attention of our readers to Dr. Stemmerman's article, which appears as a leader in this issue. In it the author gives us a frank, honest account of what he met on the journey in question.

He states with exact detail just the points which should be watched in the contemplation and carrying out of such a trip. He warns of difficulties likely to be met, and like a wise practitioner tells us how they may be overcome. There seems to be on the part of a great many people an idea that automobiling is all sunshine, and consists largely in handling a few levers certain ways. There is, however, a practical side to the pleasure, as is wisely pointed out by Mr. A. C. Bostwick in a contribution he recently made to the "Book of Sports."

It is by the record of actual experience that we can make the AUTOMOBILE MAGAZINE of the greatest value to automobilists and those contemplating the purchase of vehicles, and it is hoped that any readers who can add to its attractiveness and interest by giving us facts connected with any trips they may take will do so. If readers will help us in this matter we will go to all necessary expense in the way of making illustrations and other incidentals to make the publication an earnest exponent of automobilism in all its phases.

The Commercial Vehicle

The heavy wagon and also delivery wagon will, we feel, come to be used more and more just as soon as one is put on the market which meets the requirements called for by such services. Several attempts have been made in this country to build a satisfactory vehicle of this kind, but none have as yet been found to exactly come up to the mark. Over in England the development of heavy trucks has been greater than here.

The field of the delivery wagon is a large one, and has not been followed up as closely as one would imagine it would have been in a country like America, where so much of the commercial spirit prevails. We feel that unprejudiced and exhaustive information concerning the development along the lines referred to would be of inestimable value to prospective purchasers. We believe that there are many firms now halting between two opinions on the matter, and if our readers would help us in presenting the matter from all points of view it would be beneficial not only to merchants who are contemplating the investment of money in such articles, but also the manufacturers. It is to be hoped that this branch of the motor vehicle industry will not be lost sight of.

There are many points in which the delivery wagon and heavy truck must differ from the pleasure vehicle, owing to the greater loads to be carried. There is the question of tires sufficiently strong to stand up under the extra weight, not only of the load carried, but of the wagon itself found necessary to carry the needed weight of motor and running parts.

We ask the co-operation of all those interested in the development of the auto-truck in this matter. Articles from those engaged in this field of work are requested.

A great many people are apparently surprised when they see a motor vehicle for the first time. This surprise is caused by the noise which is created by them while in motion and sometimes even when standing. They seem to expect that automobiles should not only be horseless but noiseless. To a very great extent this objection is mere twaddle, for as a matter of fact there are to-day hundreds of motor vehicles running around our city streets which do not begin to make the noise usually found in a large majority of horse-drawn vehicles.

Housing the Automobile

Having purchased the automobile of our choice—the best, of course—the next problem is where to keep it. If we have a stable or carriage-house this question does not arise, but to the person who must build a house for the vehicle of his choice it becomes a live subject.

The main requirement is room to house the machine, leaving ample space around it for washing, inspection and repairs. Then a pit to allow getting under the machine comfortably for repairs or closer inspection is a desirable feature, though not an absolute necessity. This can, of course, be under the carriage when in its normal position, but it is generally more convenient to have it in a separate corner of the house. Where it is under the carriage it is best to have a cover for it which can slide on rollers so as to easily cover or uncover the pit when desired.

The floor is preferably of cement, both on account of washing and of not absorbing any oil that may drip from the carriage, but this is a matter of individual choice, according to circumstances.

When it comes to the design and the question of a second story, the architect comes into play and the problem becomes interesting. There is no need for stalls or hay loft, but at the same time storage room or a little shop is often very handy.

We believe it would be of value to our readers if those having experience in this line would send us photographs and plans of their houses and also give the cost, together with any suggestions for changes that would be improvements.

The Winton Motor Carriage Co., of Cleveland, has just opened a branch in New York city, with a salesroom for carriages and parts and a storage depot for Winton carriages exclusively. In connection with this a repair department with competent mechanics will be run. Mr. Percy Owen will have charge, and all Eastern business will be handled through the New York office. It is located at 150 E. 58th Street, New York, and is admirably adapted for the work. There is a glass roof, and all carriages can be stored on the ground floor. Mr. Owen is admirably suited for the work, and we bespeak for the establishment a very successful career. Telephone, 4421 38th Street.

Early Developments

BY WILLIAM H. MAXWELL, JR.

FEW realize the importance of the part played by the commercial wagon and truck in the affairs of life. Little is used by man which is not brought him by a more or less extensively organized system of transportation. The horse, wagon and truck have very important roles in such a system. We have but to look over the amount of capital invested in building these vehicles, and we get some idea of how essential they are to the proper conduct of modern business—such an amount of money is never risked because of the mere pleasure derived from the operation, but because there is a constant demand for a better and easier mode of freight carriage in our large cities and country towns. The horse light delivery wagon, and the horse truck for heavy traffic are, after all, nothing new. From time immemorial, such vehicles have been used, and the wagons now running are but highly developed forms of the crude and ancient product.

With the advent of the automobile, we are enabled to look with hope for the time when the necessaries of life, to say nothing of the luxuries, will be brought to us more quickly, more cheaply, and in a more cleanly way than under the present system. The motor vehicle is so infinitely much cheaper to maintain and operate for business purposes than the horse, that this reason alone would be sufficient to make it meet with approval and adoption. Added to this great argument is the total absence of fear of overtaxing the strength of the machine. It takes up but little room, is under perfect control, and moves around most expeditiously.

Figures give a better idea than can be done by any other method of illustration, of the extent of the field of the commercial wagon. The late Colonel Waring, the Street Cleaning Commissioner of the old City of New York, estimated the number of trucks in use in the city

at 10,000; Boston uses 3,000, and Philadelphia at least as many more. The number of light delivery wagons is, of course, greatly in excess of the number of trucks, and an estimate of 15,000 such vehicles now in use in New York City alone is very conservative. When we come to consider the other great cities, together with the suburban districts, where delivery wagons are necessities, the opportunity for the automobile seems unlimited.

In addition to the freight delivery vehicle, there is a constantly growing demand for the motor omnibus, and for the cab for use in public service. The automobile "bus" has a very extensive field in such places where the traffic is not sufficient to pay the interest on the investment necessary to construct a trolley road.

Many of the large railroads are actively engaged in examining the vehicles now on the market with a view to using them as feeders in both freight and passenger service at points where the facilities are now inadequate for bringing the people and produce to the points of embarkation.

For many years past numerous inventors all over the world have been struggling to perfect the motor vehicle. France has been pre-eminent in this movement, and as a result we now have such machines as the Panhard-Levassor, and others of equal note and excellence. At the same time the development of the commercial vehicle has not been neglected, and in Paris to-day, a very large proportion of the freight transportation of the city is done by means of the automobile. In England we find that the commercial vehicle has been developed along extremely broad lines, and there are at least three manufacturers who have proved conclusively that their product will do all they claim. While the pleasure vehicle has not been neglected in Britain, the Englishman, ever on the alert for what is practical, has betrayed a very keen interest in all that pertains to the light and heavy delivery van.

In the United States, we find a very different state of affairs. The actual beginning of the present automobile movement may be said to have begun about ten years ago. Until very recently those who endeavored to place the industry on a working basis had a very hard time. Almost without any adequate reason, capital and the public suddenly changed their attitude and plunged into the sea of exploitation. A number of violent deaths by drowning have resulted, and several more are predicted for the near future. Such is only the natural result of the methods pursued by a great number of those who

have entered the business. Companies have been incorporated by irresponsible boomers who have been able to impose on a few wealthy men, and whose main object was and is to foist a valueless stock on the "dear public." Very few have understood even the first rudiments of the business, and poor judgment, to say nothing of actual dishonesty, has marked many concerns for early failure.

It is difficult to say just what has been the means of doing the greatest amount of good to the development of the automobile in the United States. The pleasure vehicle has been rushed to the front, and developed along fairly successful lines. With true American vigor our manufacturers have grasped all that has been good in foreign motor car construction, and have endeavored to perfect those parts which have hitherto been found to be impracticable. As a result the steam vehicle has been vastly improved over the similar product of foreign manufacturers, and we lead in the production of the electric vehicle. It must be said, however, that we are not so far advanced when the gasoline motor is considered.

Until recently, little was done in this country looking toward the development of the commercial wagon and truck. The electric vehicle, because of its simplicity in operation, immediately jumped to the front in this field, and undoubtedly, has to-day the greatest hold on this line of work. Some gasoline and steam delivery wagons have been projected and put on the market, but not on nearly so extensive a scale as the electric vehicle. In regard to truck construction, a careful examination of the field shows that there are but four legitimate manufacturers who are turning out an honest product. The others claim to be entering the field on such terms, but their efforts have apparently been devoted, up to the present time, to selling worthless stock.

In considering this broad topic of the commercial vehicle, which is to be the theme of this department, many vital questions will have to be dealt with from time to time, but the aim throughout will be to demonstrate to all, beyond the shadow of a doubt, the fact that the motor car is practical for commercial uses, and cheaper than the horse. In order to show this conclusively, it will be necessary to demonstrate that the automobile will do either more work for the same expenditure, or that it will do the same work for a smaller expenditure, and as a possible third alternative, do the same work for the same expenditure for a greater number of years than the system it is attempting to supplant.

How can the proof of the three foregoing propositions be placed before the prospective users of the motor delivery wagon or truck in

such a manner as to carry conviction and leave no doubt in any one's mind as to the real value of the commercial automobile? The actual experience of others who have used motor deliveries in their business, and who have found that they can and will do the work in a highly satisfactory manner is the best evidence that can be laid before the conservative business men whose interests and means will not allow of their making expenditures for experimental purposes. The tabulation of the results obtained should show not the experience of one day, a week, or a month, but should represent the work done under ordinary conditions on each and all of the three hundred working days in the year.

The time has passed when the commercial motor vehicle can be offered to the business man on any other than a dollars-and-cents basis. If the automobile is not cheaper to operate than a horse delivery, no great future is open to that vehicle. From a purely commercial point of view the motor delivery wagon and truck will be, and even now are, the mainstays of the automobile industry. To receive popular support they must be offered as an economy, and solely on such a ground. The saving must relate to the operating and maintenance charges, and such a result can only be reached by a close understanding between, and the co-operation of, the consumer and the manufacturer. The former must use a reasonable amount of common sense in operating his vehicles, and the other must bend all his energies to bringing the maintenance charges down to the lowest possible level.

The merits of the three systems, steam, electric and gasoline, are not such as can be canvassed in a moment. Each possesses many advantages not shown by the others. The use to which the vehicle is to be put will decide in every case the advisability of using a certain kind of motor. Where a great positive force is necessary to move say five or six tons, steam seems to have given the best results. An offset to the use of steam is the necessity of having a more experienced and intelligent operator than is the case of the electric vehicle. For light delivery ranging from 1,500 to 2,000 pounds, there is no question but that the electric vehicle renders extremely efficient service, and is the most popular. We have not had much opportunity in this country to observe the practical workings of gasoline delivery wagons, but in one case at least, perfect satisfaction seems to have resulted from their use.

It is a true saying that in every family there are some black sheep, and the automobile industry is no exception to the rule. It is necessary that the prospective purchaser of an automobile should be on his guard against the persons who are attempting to make capital of the

present desire of over-ardent enthusiasts. Their vehicles present rather a good appearance, but how soon the mechanism lies down and refuses to render the service contracted for, can only be adequately and fittingly described by those who have suffered from the misrepresentations of those who sold the vehicles. Every purchaser should insist, and he will find no difficulty in getting the legitimate interests to do so, that the manufacturer stand back of his product at all times, and live up to his guarantee. When the experiences of the buncoed business men are published, the light-weights of the industry will find themselves driven to the wall, not by any combination of capital at which

The Thornycroft Steam Wagon

they can rail, but because of their own dishonesty and short-sighted policy.

With this article are shown three types of steam trucks, one built under the Thornycroft patents by the Cooke Locomotive Works, Paterson, N. J., and the other two by T. Coulthard & Company, Limited, of Preston, England. As is shown by the illustrations, all three vehicles are of purely English design.

The Thornycroft truck is 17 feet 6 inches long, by 6 feet 6 inches extreme width across the platform. The wheel base is 9 feet 11 inches in length, and 5 feet 6½ inches (center to center of tires) transversely. The platform is 12 feet ½ inch long by 5 feet 7½ inches wide, and has 68 square feet for carrying goods. The height of the platform is 3

feet 11 inches when light, and 3 feet 9½ inches when loaded with three tons. The frame is of channel steel, and is supported upon the axles by regular bearing springs. Attached to the under side of the rear axle are boxes built on the locomotive type, in which the driving axle turns.

The driving axle is made from heavy forged steel shafting, and affords a good example of the great strength of the vital parts of the mechanism. Although required to transmit but 35 horse-power as a maximum, it is the same size as a shaft transmitting some 120 horse-power.

The wheels are of the artillery type with metal hubs, and ash spokes and felloes, with broad steel tires. The front steering wheels are 2 feet 10 inches in diameter, with tires 4⅜ inches wide, and are pivoted on the Ackermann system. The driving wheels are 3 feet 3 inches in diameter, with tires of 5¾-inch steel.

The boiler is of the water-tube type, annular design, centrally fired from the top and having the fire completely surrounded by tubes which connect the upper annulus with the bottom vessel. The fire is carried in the hollow of the lower annulus in such a manner that the tubes are preserved from contact with the burning coal. The necessary draught is created by the exhaust blast. The working pressure is 115 pounds per square inch. The fuel giving the best results is a steam coal or coke, but provision is made for the substitution of a liquid fuel burner.

The engine, which is suspended from the channel steel under-frame from three points in such a manner as to be relieved from strains due to any distortion undergone by the frame, is of the horizontal compound, reversing type, with cylinders 4 inches and 7 inches diameter, by 5-inch stroke. It is enclosed entirely in a dustproof and oil-tight casing, and runs in an oil bath. The engine can be disconnected from the countershaft, and, running freely, without propelling the vehicle, may be employed in hoisting the load on the platform.

A condenser is done away with, the exhaust steam passing through a simple form of feed heater.

The transmission gear is chainless. Two pinions are loose upon the engine shaft, either of which engages with and locks into one of two machine cut tooth wheels upon a section of the countershaft.

The rear axle is fitted with a differential gear. Powerful brakes are applied, which act on the tires of the driving wheels, while of course the simple reversing of the engine provides another brake.

Two types of vehicle are now being turned out by the American holders of the Thornycroft patents, one capable of transporting three tons, and another with a capacity of five.

The Coulthard vehicles are made to carry the same weights as the Thornycroft, and are manufactured in similar sizes. Forty have been recently ordered for use in Portugal. In the five-ton truck the engine used is the Coulthard improved enclosed compound link reversing gear type, and develops 25 brake horse-power. The transmission of power from the compensating gear shaft to the road wheels is by means of patent chains, which are so designed that each chain is capa-

The Coulthard Four to Five Ton Lorry

ble of transmitting the whole of the power, and has a factor of safety not less than ten.

The wheels are of the gun-carriage pattern with hubs of steel, having spokes of oak, and felloes of ash. The diameter of the front wheels is 2 feet 9 inches by 5 inches face, and the driving wheels are 3 feet by 6 inches face.

The boiler is of the fire-tube type, hydraulically tested to 400 pounds per square inch, and can be fired by coal, coke or oil. The vehicle is guaranteed to take a load of four tons up a grade of 10%, and if a trailer is used to carry the additional weight it will transport two tons more.

The Coulthard three-ton lorry is much the same as the five-ton, except that the use of oil is recommended as the fuel in this case. Spur gearing is used to transmit the power from the engine shaft to the first motion shaft. In the engine the piston valves are so arranged as to provide only a very thin wall between the bore of each cylinder, the piston valves being arranged at the back. By this system the usual central bearings are dispensed with, and by using a slightly larger shaft, carefully balanced, uniform pressure is secured on the two main bearings.

THE ELECTRIC DELIVERY WAGON.

The advance the electric light delivery wagon has made in public favor has been something phenomenal. When the heads of

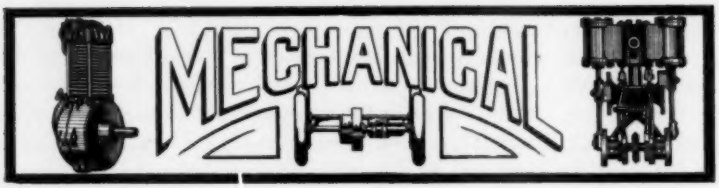
Two to Three Ton Lorry of T. Coulthard & Co., Ltd., Preston, England

some of the larger houses which have adopted motor vehicles are questioned their answers are food for much reflection. Some are dissatisfied because they have been duped by the manufacturers, but it is evident that their feeling is more of personal anger than of any quarrel with the electric vehicle as such. Made to believe that their equipment would do much more than it was really built to accomplish, these houses soon came to grief by trying to make forty-mile runs on a twenty-five-mile battery. Little need be said here of the course of the manufacturers who pursue such dishonest tactics, for swift retribution

will come of its own accord. You can only fool the average business man once on a certain commodity.

Even those managers and proprietors of stores who have been most badly sold have a perfect belief in the capability of a well made electric delivery wagon. One well known concern in the city of New York, employing about 100 delivery wagons of one kind or another is about to order twenty-five motor vehicles to be placed in service on February 1, next. The manager in this case made a very specific reply when questioned in regard to the matter. "Yes," he said, "we have had all the troubles that can, I believe, possibly come as incidents to the use of the electric delivery wagon. Our batteries have given out; our motors have been defective; and our patience has at times been severely tried. Still they are cheaper to operate than a horse system, because one electric wagon has done, will do, and is doing every day two and one-half times the work of one of our horse equipments. I have learned one thing, and that is, more than half our troubles were occasioned by our own neglect and carelessness. In a service the size of ours it is necessary that we employ competent help to look out for our vehicles, and since they have been receiving such care they have rendered excellent service."

Such a statement of the exact facts speaks volumes for the future of the motor delivery wagon. It is not a statement a manufacturer could possibly make without laying himself open to a good deal of adverse criticism. That such an opinion given by a man who has had actual experience will have much weight with his fellows there can be no doubt. The results obtained by the house in question have been narrowly watched by the other firms in the same line, and the initial order for twenty-five vehicles is only a harbinger of what will happen in the automobile delivery wagon business next spring.



The Motor Wagon For Business And a New Power Transmission Device

BY A. H. CHADBOURNE

THE subject of The Motor Vehicle for Business purposes is so broad and far reaching that one should hesitate to enter upon it, except with the determination to confine himself to outlining the various fields in which the motor wagon is destined to play an important part, or, better yet, to take up some particular type or design and attempt by describing that to give some information or help to those who are interested in the subject, either as designers, builders or possible users.

The first and all-important requisite of any motor vehicle designed for business purposes, is that it shall perform at least the same amount of work as a similar horse-drawn vehicle, and do it at less cost to its owner. The man of means may use for his personal pleasure a motor vehicle to operate which he spends more money than his coachman ever dared expect to see expended on the finest road horse in his stable, but the large express and transfer companies, or the managers of our great department stores, must be shown a very considerable saving before they will authorize the outlay necessary to change their system from horses to mechanically propelled vehicles, and, all things being equal, the type of vehicle which shows the highest ratio of economy and reliability in operation, will be the foremost in the race for supremacy. The first cost will enter into the calculation only so far as the interest on the additional capital invested figures as an expense in operation. It may be possible to produce a commercially successful motor wagon at a cost that will compare favorably with a similar horse-drawn vehicle, but it will not be for many years to come, except, possibly, as compared with the investment of the larger express companies, where, for each two-horse wagon, they have to keep an average of about four and one-half horses.

In such a case, taking into consideration the saving of floor space in the stable, usually located on valuable ground, and considering further, the greater mileage capacity of the motor wagon, which makes it possible to perform the same service with a less number of vehicles, it is not unlikely that an express company could be equipped outright with a complete motor vehicle plant at a cash outlay no greater than that represented by their present equipment, and the saving in operating expense would doubtless be enormous.

It is not within the scope of this article to take up the relative cost of operation of horse-drawn vehicles with any particular type of mechanical vehicle, but more particularly to speak of the requirements of the successful motor wagon, and describe some new and interesting mechanical devices which have been perfected during the past two years while working out the problem of commercially successful vehicles for business purposes. How near the inventor and designers have come to that long sought goal is left to the reader and general public to decide.

Everyone will agree that the cost of operation per day, or per ton mile of paying load carried, is the one all important factor, and the items, wear, tear and depreciation go to make up a large portion of the operating expenses.

From all data obtainable, the internal combustion engine, using gasoline or any similar hydro-carbon oil, is by far the most economical prime mover for any class of vehicle, and, were it a flexible power, like its would-be-competitor, the electric motor, the horse would long since have been withdrawn from the heavy truck and dray, just as he was from the old-fashioned street car, for, as Mr. Frank J. Sprague, the "Father of the Electric Street Railway," once said in one of his after-dinner speeches, "The hum of the electric motor is the song of the emancipation of the horse." Unfortunately, however, the gas engine is far from flexible, and, while it stands head and shoulders above all its competitors on the score of economy in fuel consumption, it absolutely refuses to run backward, or to slow down from its normal speed without sacrificing the larger part of its original power, and when overloaded, it gives one despairing gasp and stops.

On a light runabout these otherwise objectionable features are not of so much consequence and the great economy of the gas engine and its perfect safety more than overbalance the annoyance and expense of the belts, chains and gears necessary to harness this intractable power.

With a regular business vehicle, from a light delivery wagon to

the heaviest trucks capable of hauling tons of freight, the conditions are very different. As the loads are to be heavy and usually carried either for a profit, as in the case of the express and baggage transfer companies, or as a gratuity, as in free delivery systems of department stores, economy and certainty of operation are a "*sine qua non*," and hence the gasoline engine was chosen as the cheapest known prime mover in the experiments and work referred to before in this article.

Once having a suitable practicable gas engine, simple in detail, carefully designed as to its wearing parts, that all such parts may be easily inspected and repaired, or replaced if worn, and with a sufficient number of cylinders to insure freedom from vibration and shock, the next question that confronts the designer is what means of transmission shall be used between the crank shaft of the engine and the driven axle of the wagon.

There is little choice between the methods in common use to-day; none of them are desirable even on a light vehicle, while it would be entirely out of the question to try and handle commercially a heavy truck by any of the arrangements of belts, chains, gears or combinations thereof, common to the present motor vehicle employing the internal combustion engine. It must be remembered that while this engine is itself a most economical source of power, yet the losses in transmission may be so great as to render the complete vehicle commercially valueless.

Mr. Hugh Dolnar, in his very interesting article, "The Final Automobile," says, in the September issue of this magazine: "With the non-reversing internal combustion motor a reversing gear must be added, and clutches must be introduced, and it is still deemed desirable by most automobile designers to include in the transmission elements an ideal speed and direction change mechanism, which may be actuated by a single hand lever, so as to cause the wagon to run either backward or forward at any rate of speed from zero to the maximum, without varying the speed of the motor shaft." He adds, however—"No such speed-changing mechanism is known, nor has any near approach to it been made." Continuing further this same talented writer, in his chapter on clutches, says: "It is very clear that if suitable change gearing and clutches can be had the hitherto intractable Otto cycle internal combustion motor becomes an ideal agent for road wagon driving, if a sufficient number of cylinders are introduced to give a constant motor shaft torque."

It is apparent then from the foregoing that it is well recognized

that the "link" between the power shaft of the engine and the driven axle of the wagon is the "missing one," and the success of the motor wagon for business depends on the proper solution of that problem.

The accompanying illustration, Fig. 1, is the side view of an express motor vehicle of the same general carrying capacity as the ordinary two-horse express wagon. This is the latest type of motor wagon built to demonstrate the practicability of the new transmission device and speed changing mechanism before referred to, and this design, with one or two minor changes in detail, has been adopted as standard.

Dimensions of body inside are 9 x 4′ 2″.
Carrying capacity 5,000 pounds.
Rear wheels, 52″; front wheels, 38″.

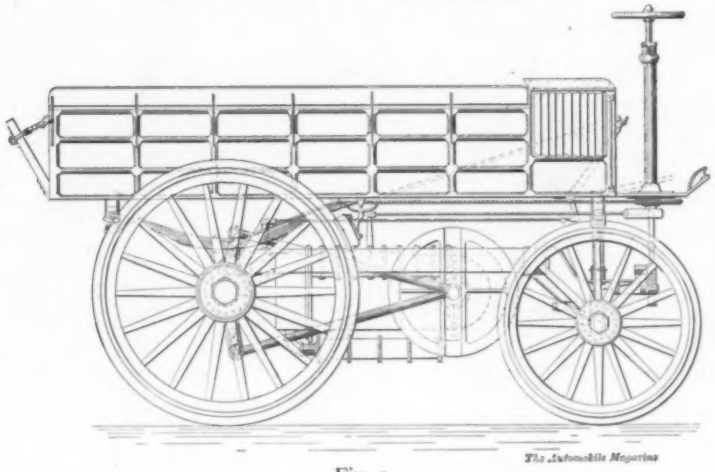


Fig. 1

Running gear built up of channel iron, which carries as the motor a two-cylinder internal combustion engine, using ordinary gasoline. The engine is designed so that all moving parts are either in sight or easily gotten at for inspection or renewal. It has copper water jackets, giving great water capacity, and rapid radiating surfaces, so that it may be run under full load continuously without undue heating.

The fly-wheel is 26 inches in diameter and makes 400 revolutions per minute when engine is running at full speed, and developing 12 horse-power. This fly-wheel plays an important part in the "missing link" power transmission device between it and the driven axle of the wagon.

Fig. 2 is a plan view of the running gear and shows the connecting rods, from the crank pin of the fly-wheel (which is, as shown, concentric therewith) to the arms of a "silent reversible roller ratchet" keyed to the driving sleeve on the rear axle and actuating both rear wheels through an ordinary compensating gear as shown.

Fig. 3 is a section of the ratchet showing ends of rollers, and

Fig. 4 shows a longitudinal section through the same ratchet.

It will be noticed that each steel roller is at rest on a neutral plane, with inclines at either side and that the rollers are separated or spaced by a cage. Means are provided, by keys with a spiral feather, to shift this cage so that the rollers may be forced to engage on either incline

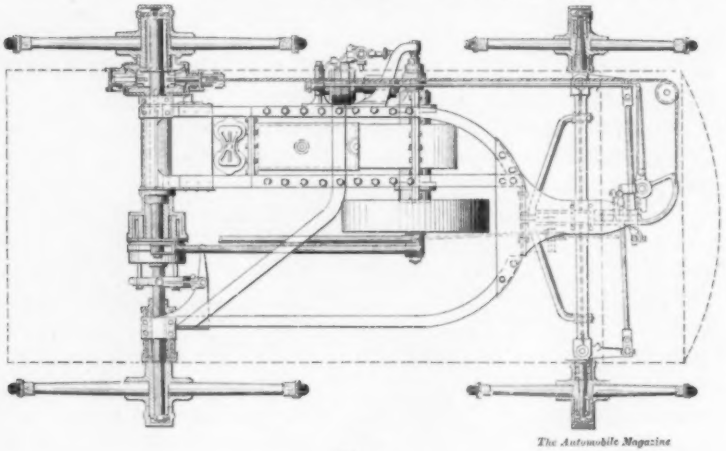


Fig. 2

at the will of the operator. The cage having been set to cause the rolls to engage on the right incline to go ahead, it must be obvious that, if a reciprocating movement be imparted to the arm on the upper side of the ratchet, that, on the forward pull, the rolls will attempt to climb the incline and failing so to do must and do wedge, thus taking the steel center and axle forward with them a portion of a revolution. It should be noticed in Fig. 4 that there are two sets of rollers working on the same steel center, each set actuated by a different connecting rod, so that while one set of rollers are pulling the other set are being brought into position to push, and hence as this action takes place alternately, a turning motion is imparted to the rear axle. In practice, it is noticed that, since the reciprocating movement is obtained by

equal rods, actuated by the same crank pin, there is a lap or lead of one impulse over the other to such a degree as to make the *turning movement of the rear axle constant,* and there is *no step-by-step movement,* as might at first glance be expected. All moving parts of this ratchet are tool-steel hardened and running in oil. There is no appreciable lost motion, and the wear after two years' experimentation is not worthy of notice.

Having explained in a general way the action of the roller ratchet,

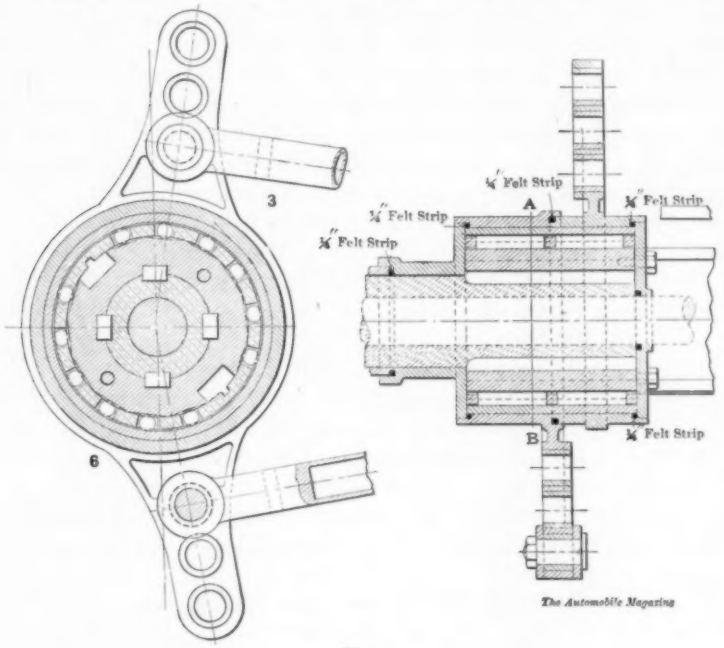


Fig. 3

the next point to be considered is the fly-wheel with movable crank pin from which comes the variable reciprocations of the connecting rods.

The fly-wheel is of cast iron, with a cylinder 3 inches in diameter, cast through it. In this cylinder is fitted a brass piston, in which is screwed the crank pin. A sliding shoe to prevent the piston from turning and to keep out the dirt, a stiff compression spring at one end and a leather cup at the other, with an oil passage through the crank shaft

to a small pump running from the side shaft of the engine, completes this simple device.

Two connecting rods of equal length connect the upper and lower ratchet arms to the crank pin.

A suitable connection to the hand lever in front of the driver, on which is also connected the band brake, makes it possible for a man to control the vehicle with as much precision as the engineer of a locomotive does his engine.

If this rather tedious explanation has been reasonably clear, it will be observed that, with the gasoline engine running at full speed and the "silent reversible roller ratchet" set to go ahead, there would be no motion imparted to ratchet or wagon so long as the crank pin of the fly-wheel remained at center. If, however, the pin becomes eccentric to the fly-wheel in the slightest degree, a movement is at once set up in the connecting rods which again would be imparted to the arms on the roller ratchet, and as, in fact, there is practically no lost motion, and the "bite" of rollers is instantaneous, it follows that, when the pin is off center only one-quarter or one-half of an inch, a slow starting torque of stupendous power is developed at the driven axle.

As the pin moves further and further from center, the vehicle accelerates until the desired speed is obtained. The movement of this pin is obtained by the action of the small plunger pump carried on the frame-work and operated through a friction clutch on the side shaft of the engine.

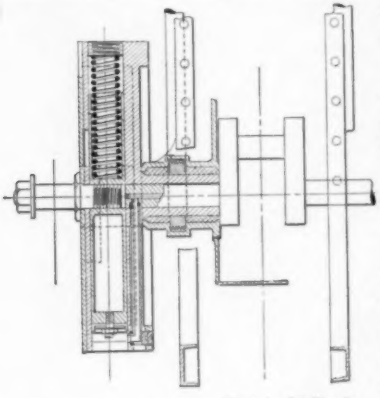
It is a slow moving pump, and each stroke forces oil through a check valve into the cylinder of the fly-wheel against the piston which carries the crank pin.

The functionating of these parts is such that this pin may be moved out slowly or rapidly, as the occasion may demand. In slowing down or stopping the wagon, the pin may be dropped back toward the center by degrees, or it may be thrown back in a fraction of a second, and a powerful band brake applied, all by the movement of the same lever.

The forward position of the hand lever throws in the friction clutch, which starts the pump, forcing oil against the piston in the fly-wheel, and like an hydraulic jack, the pin begins to move off of center, and the vehicle starts. So long as the hand lever is pushed forward and the friction clutch held in engagement the pump works, and forces the piston and crank pin further and further from center, until the maxi-

mum throw is reached, after which the oil is by-passed. When sufficient wagon speed has been obtained, the hand lever is brought back to the normal position, the pin remains oil-locked, and a constant wagon speed is maintained. A slight pull on the lever opens a small valve, which allows a very little oil to escape, and the pin begins to return towards center; the stroke of the connecting rods becomes less and less, and the vehicle gradually slows down.

A further pull opens a larger valve, and, as before stated, the pin rushes back to its central position before the band brake can begin to act. To run the wagon backward, the reversing lever is thrown over; this action forces the two straight keys with spiral feathers into the steel center. These spiral feathers sliding in the keyways in the bronze cage cause it to recede, so that the rollers engage on the opposite side of incline, allowing them to wedge on the back stroke, thus giving the reverse movement to both ratchet and vehicle.



The Automobile Magazine.

Fig. 4.

It is evident, then, that with this device, the heaviest motor wagon can be run backward or forward at any desired speed from zero to maximum without interfering in any way with the prime mover, whether that be steam, gasoline, electric, compressed air, or what not, but it is particularly adapted for the non-flexible, non-reversible, but most economical internal combustion motor.

No matter how heavy the load or how steep the grade (within reasonable commercial limits) the wagon equipped with this device can *not* be stalled. If the engine be not powerful enough to take the load and grade at six miles an hour, but can at three, the driver has only to drop his crank pin back toward center and sacrifice speed for power.

Should an engine stop from any cause on a hill, the brakes can be set and the engine started and allowed to run at full speed. The crank pin of course being on center no work is being done. The driver can then throw off his brake and simultaneously move the pin, say one-fourth inch, off of center, giving a half-inch stroke at full en-

gine speed. At this short stroke the leverage is enormously in favor of the engine, and the wagon would at once get under way.

Not only does this device seem to answer every possible demand from a purely mechanical standpoint, but commercially it has the great advantage of high efficiency and economy of operation. There are no gears, belts or chains. The fly-wheel and two connecting rods will wear a lifetime, and the wear on the silent reversible roller ratchet has not been enough in the two years of intermittent use to determine how many years it would wear under normal conditions, but it will last many years, and the wearing parts are very few and easily replaced.

This principle has been worked on for more than three years and for the past two years it has been tested under various and most trying conditions. The writer having had an almost daily opportunity to watch its development, cannot but feel that this New Year will see in this device a great step toward the solution of the problem of the successful motor vehicle for business purposes.

An Electric Runabout

IN the early stages of automobile development considerable discussion arose as to whether coachmakers or bicycle builders would show most interest in that development. There can be no doubt that from the lessons taught by bicycle manufacture, automobilism has received its greatest stimulus.

E. C. Stearns & Co., of Syracuse, the well known bicycle manufacturers, have completed and thoroughly tested a new motor vehicle which possesses a number of interesting features.

In design the carriage, which is illustrated herewith, is unique, being of the lighter order of "runabout" of the Stanhope type, with sidebars and cross-body springs. The sidebars are rigidly attached to the rear axle sleeve by forged steel through braces, and to the front axle by fore-and-aft quarter springs, held to the sidebars about mid-length by clips, and to the under side of the axle by links and bolts. The sidebars are clipped to a front crossbar with a half spring attached to the front axle by goosenecks and links, this form of construction affording great elasticity in accommodating wheels to roadbed. The steering mechanism consists of an improved form of ball-bearing knuckle joint close to the hubs of the forward wheels, which are so connected with a center triangle, actuated by a vertical hand

lever with fore-and-aft movement, that each of the two forward wheels is brought to a true radial position with regard to the common center, around which the carriage may be made to turn.

Wire wheels, with 3-inch pneumatic tires, of 32 and 36 inches diameter respectively, are used, of regular Stearns bicycle construction, with wooden rims. The rear wheels are driven by means of a compensating gear placed upon the rear axle at the right side of the carriage. This is a positive drive upon the two wheels connected by it; at the same time it allows either to turn faster or slower than its mate, according to whether the wheels run in a straight line, or curve

The Stearns Electric Runabout

to the right or left. The shaft carrying the rear wheels and compensating gear runs upon ball bearings at four points, and has a clutch joint in its middle which admits of setting the wheels slightly nearer together at the bottom than at the top. This feature is peculiar to the Stearns carriage. By its use, the sagging apart of the driving wheels at the bottom, is avoided, and the wheels are given just the proper undercut to bring an equal distribution of strain upon both the inner and outer rows of spokes. The carriage is fitted with a 2½

horse-power series-wound motor. There is a special form of series-parallel controller with three speed positions, of 5, 8 and 12 miles per hour, forward and backward, and a charging position; also a powerful drum brake upon the motor, all actuated by one lever at the left of the operator.

The carriage body is properly of the stanhope model, with deep seat upholstered in ecru broadcloth. The rear endboard of the body swings outward and downward, as a footboard with chain supports, and the back top hinges up to form the back of a dos-a-dos seat over the battery box. The total weight of the vehicle, with two passengers, 900 pounds of battery and 200 pounds of motor and controller, is about 2,200 pounds, but there is a remarkable stability and substantiality about the whole construction, guaranteeing endurance, but which would give heaviness to the general appearance were it not for the exceptionally fine sweeping lines of the whole.

Clinton E. Woods Automobiles

SIMPLICITY in the motive power and protection in its transmission are two very necessary things in the make-up of an automobile. These points are obtained in the Clinton E. Woods automobiles by the use of a solid rear axle and one motor, in which all gearing is incased, thus being made an integral part of the motor and giving absolute protection from dust and water.

An automatic controller handle operates all the varying speeds, as well as both the electrical and mechanical brakes, the mechanical brakes being applied directly to the wheels by a very powerful friction device. The electrical brake is an electrical arrangement which operates without friction, and by means of which the longest hills can be coasted at a moderate speed without the wear, tear, and trouble incident to friction brakes, the two mechanical brakes being supplied, however, for emergencies. The narrow front wheel tread enables the steering to be accomplished by a new combination that makes the vehicle respond instantly to the slightest pressure of the steering lever, and also gives the genuine automobile appearance so long looked for.

The actual current consumption in these automobiles, it is claimed, is 20 per cent. less than in any other make of electric vehicles of the same weight, and 30 per cent. in hill climbing, the motor having been

designed after a long series of tests with this purpose in view. These vehicles have been designed with a longer wheel base than anything heretofore built, to make them ride easier and give more foot room in getting in and out.

The even distribution of weight on the wheels and the extremely low center of gravity permit quick manipulation with safety and comfortable riding even on rough roads. The carriages have been designed after a long experience that has pointed out every possible improvement in style, operation, convenience and comfort.

Low Water Alarm Column

The top road buggy built by this concern is as beautiful as it is original. It has every comfort of a full size stanhope, inasmuch as it is provided with a 37-inch seat, which easily accommodates two people. Its racy, rakish appearance will appeal to all true lovers of automobile sports, business or pleasure, as it is designed for all three purposes. The total weight is 1,100 pounds complete.

The Victoria stanhope is designed to carry as many as five people, the carriage seat proper being wide enough to seat three, while the drop seat provided in front will comfortably seat two people. Back of this drop seat, the front of the vehicle is upholstered the same as the interior of the vehicle. In short, it is an automobile made for one, two, three, four or five people, and looks perfectly proper and stylish,

whatever of this number of occupants it may have. This is a point of utility not noticeable in many motor vehicles.

The brougham cab has an equipment identical with the Victoria stanhope, and carries the same number of people. The front seat, however is fixed, being 14 inches in width and 34 inches long. This automobile has all the closeness and privacy of a brougham, and when open in front, all the coolness and comfort of a hansom. In fact, its utility extends to any purpose demanded of a closed or covered carriage, and can be made to carry one or two passengers up.

All delivery wagons made by this company are built with the same floor line, front, and running gear, but designs can be varied in the body, its decorations, and in the hood and sides of seat above floor level to suit the taste of the individual purchaser. The cut under and narrow front wheels allow a much quicker and shorter radius of turning. The whole wagon is so designed that one man can do all the work called for.

A Low-Water Alarm

ANY device which may be invented with a view to making the automobile more satisfactory, as well as facilitating its manipulation, ought to be welcome. On this account it gives us pleasure to present to our readers on page 91, illustration, together with description of what is known as a low-water alarm column, designed for use on Locomobile boilers.

The object of the device is simply to warn the operator when his water is so low as to need attention. The column can easily be connected up to the boiler. It is quite simple in its operation, yet of great value to those who desire to avoid the trouble sometimes caused by working the boiler when carrying an insufficient supply of water.

The column is 9 inches high, and 3¾ inches in diameter, and is made to stand 275 pounds pressure. Its weight is about 10 pounds. These columns have been in successful operation for some time past.

There is considerable objection to the use of a whistle as an alarm, owing to the effect it has on passing horses, and, in order to overcome this, a small device is used which answers the same purpose.

The device is made by Paul B. Huyette, 1225 Betz Building, Philadelphia.

Electric Vehicle Design

BY H. M. UNDERWOOD

IF the question be asked "What is the greatest advance made in the construction of pleasure and business vehicles during the past century?" there is but one answer possible. The introduction of the automobile.

No sooner did the idea of horseless carriages begin to assume its position in the field, than it appealed to the minds of a highly civilized and cultivated people, it gave to its users a more satisfactory method of transacting their business, it opened a new field of engineering, both electrical and mechanical, and gave employment to skilled and expert labor and saved a large percentage of the cost of merchandise delivery.

While all this is true, and there is no reason to further enlarge on this part of the subject, still the fact remains, that until a very recent date the methods heretofore employed in the general construction of electrical vehicles have been crude and barbarous in the matter of efficiency and practical operation. There have been many defects in the motors, batteries and running gears, as well as in the transmission of the power to the wheels.

The constant stalling of the vehicles and the unreliability of batteries, burning out of the motors, breaking of the perch or reach and the stripping of the pinions, have been such that one and all wonder why these faults exist and have not been overcome, when the electrical and mechanical minds of to-day have invented and perfected many much more complicated appliances other than those used in the construction of automobiles.

Compensating gears are employed whenever a single motor equipment is used, but the most satisfactory electrical vehicles of to-day are those using the two-motor construction geared to the wheels, one on each side of the vehicle.

Must this state of affairs still continue to exist? Must we be compelled to stand the inconvenience of being sidetracked after starting out for a ride or in the delivery of merchandise and await the arrival of another vehicle or horses to finish the trip? Must our business affairs be jeopardized to this extent, to say nothing of the expense incurred for repairs? Cannot some system and equipment be introduced that will obviate all these difficulties and bring the electric automobile to

the high and technical standard already attained in the other branches of the engineering field? Or, must we be obliged to take a step backwards and revert to the old method of travel and the transaction of that part of our business dependent on the rapid delivery of general merchandise, thereby losing time, which we must all acknowledge, means money?

We go out on the street to-day, and what do we find? Vehicles stalled, caused by too light construction, batteries emptied, motors burned out caused by overload, and a general wave of discontent hovering around us; we see business appointments broken and many

Omnibus of the Hewett-Lindstrom Motor Co.

trains just leaving the station, causing hours of delay; all on account of faulty construction.

That such instances abound and exist is a well-known and acknowledged fact among all those who are in any way interested in the advancement and manufacture of automobiles.

Necessity is said to be the mother of invention, and with this fact already established, we are in a position to give a few suggestions and prove the assertions as set forth in this article that will bring to a high state of perfection an automobile, both durable and of high efficiency.

Let us stop for a few moments and consider what course to take

in the building of an automobile. The accompanying illustration is of a 'bus capable of carrying twenty-two passengers. It was built in Chicago under the instructions of Mr. Charles A. Lindstrom, an eminent electrical and mechanical engineer, a graduate of the University of Lund, in Sweden. His ability being recognized by the Swedish Government, he was placed in charge of some works where a new time-fuse was under construction. From this he drifted into the electrical field and secured his first practical training from Lieutenant J. B. Cahoon, now President of the National Electric Light Association. Several large and important installations for lighting were designed by him and installed. He then obtained several letters patent in this and other countries, and as a result of his genius and ability has produced one of the best automobiles ever placed before the public. The construction of the 'bus here shown is more than worthy of attention.

In the building of these vehicles four cardinal points have been kept in mind. These four points are: first, safety; second, durability; third, efficiency, and fourth, simplicity of construction ; without any one of which automobiles are far from practical.

Safety being essential as the first step towards success, all parts of this bus have been figured to carry at least 35 per cent. greater load than required, *i. e.*, over and above the safe carrying capacity shown in the standard tables of metals. So well has this point been adhered to that in two years operation of this style of equipment not a single flaw or break has occurred, and when one realizes that all kinds of roads have been traveled by this make of vehicle, it shows how well the point of safety has been carried out.

*There is also provided in connection with this 'bus a special circuit breaker which protects motors and batteries, thereby increasing the safety while in use, in case of sudden overloads and danger of collisions, etc.

It may be stated that a feasible solution of many, if not all, of the difficulties presenting themselves has been that it will be found not only in having a thoroughly constructed motor with a battery of high potential, but in obtaining a perfect motor suspension with a flexible "perch" or reach. The importance of these points will be readily conceded. The object, therefore, has been to provide a simple and

* Durability may be defined as the union of two essential points, viz., fine workmanship and the best material. After all parts of these vehicles were finished and assembled, not a single change was made, not even a file being used, and every part going together without the slightest trouble. The work was done in four distinct shops, and at no time during the construction were parts taken from one place to the other for comparison.

economically constructed running gear in which the utmost freedom of the several parts is obtained in such a manner as to obviate or minimize the disastrous shocks and jars encountered in using vehicles of the more ordinary rigid construction.

Ball bearings are used not only on the wheels, but in the construction of the motors. Efficiency in the construction of the motors and batteries is the main factor to be kept in mind. A battery of higher potential than that in ordinary use is to be strongly favored.

Hewett-Lindstrom Delivery Wagon

In this omnibus the voltage employed is as high as 120, at which, with 25 amperes, a speed of nine miles per hour is obtained. This 'bus weighs 5,600 pounds, and has a seating capacity of from 20 to 22 persons, with a radius of 56 miles on one charge of the batteries, which have a capacity of 19 kilowatts. There are two 4½ horse-power multipolar type motors, having 6 poles each, and constructed so as to stand an overload of at least 100 per cent.

The braking of this 'bus is done in two ways, one brake is located inside the motor casing, while the other is applied on the outside of an internal gear which engages the raw-hide pinion on the end of the armature shaft. This last-mentioned brake is used as an auxiliary, the motor brake being ample on all ordinary roads and grades.

When carrying its full quota of passengers a grade of 16 per cent. has been made with ease, and with a load over and above the weight of 'bus of 7,600 pounds. In a recent test for the efficiency of two 2½ horse-power motors, which occupied from five to six hours, a percentage of 93 was shown and a draw-bar pull of 9 kilowatts, or about 11 horse-power, while for a period of 10 minutes an overload of 300 per cent., without the slightest injury to the motors, was obtained.

Simplicity of construction is also a very important factor to be taken into consideration. The motors, brakes, etc., are put together with an idea of securing the utmost strength, with the fewest number of minor parts, bolts, etc., and with a minimum risk of burning out the motors or damaging the batteries. The method employed in the running gear construction is to connect the front and rear axles by two bars or "reaches," each of which has such a connection to the rear axle as to swing vertically thereon, and each reach bar also has a separate universal connection with the forward axle. These reaches are also connected intermediately between the axles by a pivoted bar, and altogether the construction is such, that while the reaches substantially maintain the alignment between the front and rear axles, they will, nevertheless, permit the axles, independently, to oscillate or vibrate vertically with relation to each other with such freedom that the gear accommodates itself readily to uneven and rough-surfaced roads without jolting the riders. This is of great and vital importance when the motors are suspended on the running gear.

The next object was to provide such support for the motors as will sustain each motor in its proper relative position with the driving wheels of the 'bus, and prevents longitudinal or lateral displacement of the motors. This support will cushion the motors on the running gear in such a manner that it prevents the severe jars or concussions incident to the travel of the vehicle, as it would if it were rigidly attached to a rigid frame. This particular suspension of the motors also reduces the shocks incident to the starting of the motors, or the application of the brake, and prevents crystallization and breaking of the running gear and its connecting parts. It will be well to remember that

another very important feature in the running gear construction is the absence of welded joints or parts, as all connections are made by means of universal joints.

In the providing of an effective and simple brake for this equipment the utmost care has been exercised in its construction and the brake-shoe arms and devices for actuating the same are so made that dust, dirt and water are effectively excluded from the casing of the motors and brake, while the simultaneous and quick action of the brake-shoe arms is assured.

The best test of any theories or materials of construction is to be found in practical results only. The ease with which this 'bus is handled can be realized when we take into consideration that only a simple horizontal bar or steering handle is used, the same as on the lighter class of vehicles, though of necessity heavier in construction. As to the batteries, these are located under the interior seats of the vehicle, easy of access at all times.

This omnibus has been referred to as a very striking example of adaptation to the conditions of heavy work, for it is universally admitted that in the "stage business" the electric automobile of to-day meets its most serious difficulties.

As to the interior of the omnibus, this particular part, while not of absolute necessity, has been laid out on the same conservative lines as the mechanical electrical parts.

The upholstering is of the best leather, and located between each window are to be found push buttons for bell connection to the operator. Nine miniature incandescent lights of 3 candle power each are used for lighting the interior and controlled from the driver's seat. All in all, there is yet to be found an electric omnibus which, in general construction and design, surpasses the one here illustrated.

On the first trip made with this 'bus 42 miles were covered, and upon its return showed a drop in E. M. F. of 8 volts. If more attention was paid to the minor details in the construction of electric vehicles there is no reason why they should not take the lead in all of our large cities, as cleanliness and superiority of design must be conceded to this make of vehicle.

Long Island Automobile Club

THIS club held a meeting on the evening of December 12 at its headquarters, 552 State Street, Brooklyn.

Mr. Louis R. Adams occupied the chair, and the meeting was called to order about 8:30 P. M. The constitution and by-laws were read and adopted.

This club has since its beginning pursued and intends to continue to pursue an aggressive policy. A large number of its members are owners of motor vehicles. So far as facilities are concerned it must be considered a leader. The headquarters are nicely situated, and ample room is provided for the storing of members' machines at low rates.

Runs and parades will not be forgotten. A committee has been appointed to take charge of lectures which it is hoped will be given every alternate Wednesday. Among the lectures which have already been scheduled for are those by William J. Hammer on "Electric Automobiles," Professor Sohn on "Gasoline," Francis R. Upton on "My experiences with different types of automobiles," and a number of others. This feature of the club ought to be of great value and interest. Every activity of the club bespeaks that this addition to the list of automobile clubs will be quite a vigorous one.

Automobile Show at Philadelphia

THE first automobile show to be held in Philadelphia will take place February 4 to 9 (inclusive), 1901, under the joint sanction of the Pennsylvania and Philadelphia Automobile Clubs. The show that was held in New York city, at the Madison Square Garden, was a success in every sense of the word. The sales made by some of the manufacturers were greater than they ever hoped for, while all the sundry dealers did a good business. Philadelphia, ust at this time, is enthusiastic over automobiling in every sense of the word, as it is an ideal city for the horseless carriage, there being more asphalted streets in the city of Philadelphia than in any other city in the world. The hall in which the show will be held is the Second Regiment Armory, which has over 32,000 square feet of space. There will be a large band in attendance every day, and there will also

L. of C.

be a number of other features for interesting the manufacturers and agents and drawing a large attendance of the public in general. The price of admission will be 25 cents.

The facilities for handling automobiles and storage are perfect. There will be a track 18 feet wide, with 7-foot aisles for spectators on each side, to try any and all makes of automobiles and auto-bicycles.

Liverpool Cycle Show

ON Tuesday, Wednesday, Thursday, Friday and Saturday, Feb. 5, 6, 7, 8 and 9, 1901, an exhibition of cycles, accessories, motor cycles and motor carriages will be held in St. George's Hall, Liverpool, England. The hall selected for this exhibition is a fine, spacious one, and the main hall is admirably adapted to the holding of such a show.

The show will be open every day from 12 M. until 10 P. M. It is explicitly announced in the circular sent, that the decision of judges with regard to trials of motor cars and motor cycles must be accepted as final. No machine is to be ridden in the gangways leading to the main hall, which would indicate that vehicles are not to be shown in motion inside the building.

It seems to us that the open space directly in front of the hall would be an excellent place for showing the various machines in motion, and the steps in front of and leading up to the hall would serve finely as a reviewing stand.

All makers of horseless vehicles who wish more definite information as to rules, together with cost of space, etc., would do well to communicate with Thomas Price, Secretary, 77a Lord Street, Liverpool.

A New Principle in Gas Engine Design

UNDER this heading Mr. C. E. Sargent, of Chicago, described his plan before the American Society of Mechanical Engineers last month. Hydro-carbon engines for automobile use are governed by throttling the charge and are not as economical as the "hit and miss" type on account of lower compression when underloaded. The clearance remains constant, but the charge is diminished and the results are not as good.

Mr. Sargent proposes to cut off the charge after the piston has traveled a portion of the stroke. On the return stroke compression will begin at this point and ignition take place as usual. Then instead of exhausting at the same point of stroke as charge is cut off (as is done when charge follows full stroke) the expansion continues down to atmospheric pressure. This being the case, there is no need of a muffler, and the temperature of escaping gasses is reduced very materially. So much so that a tandem engine can be used and the piston rod packed without difficulty, which cannot be done at present.

This plan has been tested in a fifty horse-power engine and given good results, so that there seems to be no reason why it is not available for automobile work. He also has an ingenious starting arrangement which seems to have good points of its own. Builders of gasoline motors as well as the operators of this type of carriage will be interested to know of these improvements and can obtain further details by corresponding with the inventor.

The Westchester Automobile Club

THIS is the name of a new organization which has been formed by a number of well known New Yorkers, many of whom own country seats in the northern part of Westchester and along the northern shore of Long Island Sound. The club purposes to establish supply stations for motor vehicles on the country roads leading to the Ardsley Casino, the Knollwood Country Club, and the Westchester Country Club.

Howard Willetts, one of the organizers of the club, is reported to have said that the club already had forty members, among them being Paul G. Thebaud, Percy Chubb, Sidney Chubb, W. K. Vanderbilt, W. K. Vanderbilt, Jr., Worthington Whitehouse, George Fordyce Leith, Henry Graef, J. Scott McComb, E. S. Reynal, Gen. George M. Smith, Oliver Harriman, Jr., J. Dunbar Wright, Albert C. Bostwick, Bradford B. McGregor, F. W. S. Cochrane, and Frederick W. Geissenhainer.

The Automobile Index

Everything of permanent value published in the technical press of the world devoted to any branch of automobile industry will be found indexed in this department. Whenever it is possible a descriptive summary indicating the character and purpose of the leading articles of current automobile literature will be given, with the titles and dates of the publications.

Illustrated articles are designated by an asterisk (*).

***Autocar, Its Use and Management, The—**

Henry Sturmey. Chapter 6 of an article by a well known automobilist. "The Autocar," Coventry, November 24, 1900.

***Automobile, The—**

By John A. Kingman. This article is practically a history of the steam driven vehicle from its first use up to the present time. "Cassier's Magazine," New York, December, 1900.

***Bicycles, Motor—**

An article in which a survey is made of the various motor bicycles. "The Automotor Journal," London, November, 1900.

Boiler, Water Tube—

Illustrated description of the Githen's boiler used on the steam carriage of that name. "The Motor Age," Chicago, November 15, 1900.

Brakes, Report of—

M. L. Bochet on the subject presented at the International Automobile Congress. "Horseless Age," New York, November 21, 1900.

***Charette of the International Motor Car Co.—**

A description of a new type of voiturette. "The Autocar," London, November 17, 1900.

***Chart, Motor Vehicle Power—**

Which gives in the minimum of time the power required to propel a motor while at varying rates of speed and when the draw-bar pull required varies. "The Automotor Journal," London, November, 1900.

Electric Automobiles for City Service, Comparative Tests—

Abstracts of a series of articles by R. A. Fliess, which originally appeared in the Electrical World and Engineer. "Automobile Magazine," New York, November, December, 1900.

***Electricity for Automobilists—**

First of a series of articles by J. W. Roebuck intended for those who operate either electric or gasoline motors where electric ignition is used. "The Motor Car World," London, November, 1900.

Engineer be Spared? Can the—

By M. C. Krarup. A discussion of the position occupied by the engineer in the automobile industry, their manufacture and operation. "Horseless Age," New York, December 5, 1900.

***Engines, Compounding Vehicle Gasoline—**

By C. P. Malcolm. (See under Gasoline.)

***Exposition, Automobiles at the Paris—**

By G. F. Desjacques, in which he goes into the construction of the various motor vehicles exhibited. "Engineering," London, November 25, 1900.

Fuel Consumption Trials in France—

Report of the tests recently carried out; the aim being to determine the quantity of petroleum re-

quired for a given distance. "The Automotor Journal," London, November, 1900.

***Gas Engine, One Horse Power—**

Article accompanied by working drawings for an engine of the power mentioned. "Horseless Age," New York, November 28, 1900.

***Gasoline Engines, Compounding Vehicle—**

By C. P. Malcolm. An article in which the author presents the advantages and disadvantages of compounding. "The Horseless Age," New York, December 5, 1900. (See under engines.)

***Gasoline Motors, Construction and Use of Special Lathe Attachments for Machinery, Small—**

W. O. Anthony. Part 4 of a series of articles designed to point out the merits of certain tools and machinery suitable for builders of motor vehicles. "The Horseless Age," New York, December 5, 1900.

***Gasoline, Motor Vehicle, The—**

By F. B. Stearns. A single cylinder four-cycle motor is used which is placed horizontally. "Motor Vehicle Review," Cleveland, November 29, 1900.

"Gear, How High is Your?"—

A formula presented by Dr. Henry Power, intended to give an expression for the number of inches a carriage travels during one revolution of the engine shaft. "Horseless Age," New York, November 21, 1900.

Gear, Hurter Speed Reducing—

"Horseless Age," New York, December 5, 1900. (See under Speed.)

***Great Britain, Anniversary Run of the Automobile Club of—**

A very complete article, replete with illustrations taken along the route. "The Motor Car Journal," London, November 17, 1900; also "The Autocar," London, November 17, 1900.

***Hill Climbing Trials at Chanteloup—**

A very complete description of these recent trials with official times. "The Autocar," London, November 10, 1900.

Motor Car, The Moffat—

Description of a new type of electric motor vehicle, which carries the motors concealed in the hubs of the wheels. An epicyclic train between the motor and the wheel effects the necessary reduction of speed. "Trade Journals Review," London, November 15, 1900.

***Motor, Experiments with the Banki—**

By Prof. E. Meyer. Account of some tests made by the author. "The Automotor Journal," London, November, 1900.

Motor, The Pennington War—

Illustrated description of a motor designed for war purposes. "The Autocar," London, November 10, 1900.

Motor Tricycles, Some Defects and Remedies—

First part of an article by A. E. St. Craig, in which he offers a number of suggestions regarding this class of vehicles based on personal experience in the use of them. "The Motor Car Journal," London, November 24, 1900.

***Motor Vehicle, Construction of a—**

No. 8 of a series of articles by L. Elliott Brookes, showing working drawings of a vehicle for use in connection with a four horse-power gasoline motor already described in the same journal. "Motor Age," Chicago, November 22, 1900.

***Motor Vehicle, The Robinson—**

Description of an American carriage which possesses a number of new features. "The Motor Car Journal," London, November 24, 1900.

Motors and Motor Cars—

A criticism of a paper on the subject read by Mr. Charles T. Crowden. "The Autocar," London, November 10, 1900.

***Power, The Driving—**

E. J. Stoddard. "Horseless Age," New York, December 5, 1900.

***Resistance of Obstacles—**

An article by Ernest J. Loring, intended to explain the relation ex-

isting between the weight carried by a wheel and the power required to force it over an obstacle. "Horseless Age," New York, November 21, 1900.

***Road Building in the United States, Progress of—**
An article by Maurice O. Eldridge, in which he goes into a discussion of roads found in various parts of the country. "L. A. W. Bulletin," December, 1900.

***Road Building in the United States, Progress of—**
An article by Maurice O. Eldridge, Asst. Director of the office of Public Road Inquiries. This is the first article of a series to be published on the subject and is historical in nature. "L. A. W. Bulletin," Boston, October, 1900.

Silencer, The Hudlass Exhaust—
Illustration and description of a new form of muffler which possesses several new features. "The Autocar," London, November 10, 1900.

***Speed Reducing Gear, The Hurter—**
Description of a recent French device which contains a number of novel features. "Horseless Age," New York, December 5, 1900. (See also Gear.)

***Speed Varying Device—**
A very clear and interesting description of the Dieterich gear, which automatically adjusts itself to the load. "American Machinist," New York, November 22, 1900.

The Autocar, Its Use and Management—
One of a series of illustrated articles by Henry Sturmey, in which he goes into the question of car construction. "The Autocar," London, November 10, 1900.

***Tour in a Motor Vehicle—**
Miss Dorothy Edmunds contributes a record of her experience during a trip on an automobile. The story is written in an interesting manner. "The Motor Car Journal," London, November 24, 1900.

***Trials of Electric Vehicles—**
An account of recent tests carried on under the auspices of the Automobile Club of Great Britain. "The Autocar," London, November 10, 1900.

Tricycles, Some Defects and Remedies, Motor—
By A. E. St. Craig. (See under motor).

Truck, in Great Britain and the United States, The Heavy—
Second instalment of an article by Robert Bodman, in which he presents the relative advantages of certain boilers. "Horseless Age," New York, November 14, 1900.

***Vehicle, The Twentieth Century—**
By W. H. Maxwell, Jr., in which the author states a number of facts as showing why in the coming century the self-propelled vehicle will come to be more and more used. "Metropolitan Magazine," New York, November, 1900.

Vehicles, Economy in Steam—
The author, E. C. Oliver, opens with a statement of the present wastefulness of the steam engine as used for propelling road vehicles. The article points out certain lines along which improvement may be made. "Horseless Age," New York, November 21, 1900.

Voiturette, Driving a—
Continuation of a series of articles by R. T. Mecredy, in which he gives explicit and detailed information as to the proper method of handling this form of motor vehicle. "The Motor World," New York, November 22, 1900.

Voiturette, The Wolseley—
This is a new style of carriage designed by Mr. Austen. The ignition is electrical and one striking feature is the accessibility of its running parts. "The Autocar," London, November 10, 1900.

***Wagon, An English—**
Description of a steam truck built by the Lancashire Steam Motor Co. "Automobile Magazine," New York, October, 1900.

Wheels and Axles—
Copy of a report presented at the International Automobile Congress by Captain Ferras. "Horseless Age," New York, November 14, 1900.